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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Atty. Docket No: 078728/0106

In re patent application of

ROBERTS, JOSEPH et al.

Serial No. 09/833,745



Filed: April 13, 2001

For CLONING, OVEREXPRESSION AND THERAPEUTIC USE OF
BIOACTIVE HISTIDINE AMMONIA LYASE

STATEMENT TO SUPPORT FILING AND SUBMISSION IN
ACCORDANCE WITH 37 C.F.R. §§ 1.821-1.825

Assistant Commissioner for Patents
Washington, D.C. 20231
Box SEQUENCE

Sir:

In connection with a Sequence Listing submitted concurrently herewith, the undersigned hereby states that:

1. the submission, filed herewith in accordance with 37 C.F.R. § 1.821(g), does not include new matter;

2. the content of the attached paper copy and the attached computer readable copy of the Sequence Listing, submitted in accordance with 37 C.F.R. § 1.821(c) and (e), respectively, are the same; and

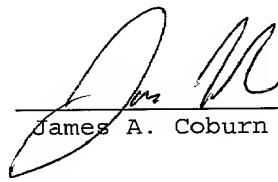
3. all statements made herein of their own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United

Serial No. 09/833,745

States Code and that such willful false statements may jeopardize the validity of the application or any patent resulting therefrom.

Respectfully submitted,

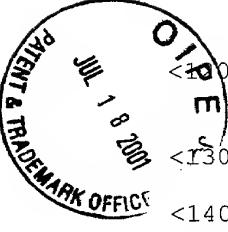
July 5, 2001
Date



James A. Coburn

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Portsmouth, N.H.
800-318-3021

SEQUENCE LISTING

25

<110> ROBERTS, JOSEPH
SETHURAMAN, NATARAJAN
MACALLISTER, THOMAS

<100> CLONING, OVEREXPRESSION AND THERAPEUTIC USE OF
BIOACTIVE HISTIDINE AMMONIA LYASE

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<140> 09/833,745
<141> 2001-04-13

<150> 60/197,770
<151> 2000-04-14

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DRAFT - 03/16/98

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Pro Gln Val Leu Glu Leu Ala Ser Val Arg Ala His Ile Asp Ala

35 40 45

Leu Ala Ser Ala Asp Thr Pro Val Tyr Gly Ile Ser Thr Gly Phe Gly

50 55 60

Ala Leu Ala Thr Arg His Ile Ala Pro Glu Asp Arg Ala Lys Leu Gln

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Arg Ser Leu Ile Arg Ser His Ala Ala Gly Met Gly Glu Pro Val Glu
 85 90 95

 Arg Glu Val Val Arg Ala Leu Met Phe Leu Arg Ala Lys Thr Leu Ala
 100 105 110

 Ser Gly Arg Ser Val Arg Pro Val Val Leu Glu Thr Met Val Gly Met
 115 120 125

 Leu Asn Ala Gly Ile Thr Pro Val Val Arg Glu Tyr Gly Ser Leu Gly
 130 135 140

 Cys Ser Gly Asp Leu Ala Pro Leu Ser His Cys Ala Leu Val Leu Met
 145 150 155 160

 Gly Glu Gly Glu Ala Thr Asp Ala His Gly Asp Ile Arg Pro Val Pro
 165 170 175

 Glu Leu Phe Ala Glu Ala Gly Leu Thr Pro Val Glu Leu Ala Glu Lys
 180 185 190

 Glu Gly Leu Ala Leu Val Asn Gly Thr Asp Gly Met Leu Gly Gln Leu
 195 200 205

 Ile Met Ala Leu Ala Asp Leu Asp Glu Leu Leu Asp Ile Ala Asp Ala
 210 215 220

 Thr Ala Ala Met Ser Val Glu Ala Gln Leu Gly Thr Asp Gln Val Phe
 225 230 235 240

 Arg Ala Glu Leu His Glu Pro Leu Arg Pro His Pro Gly Gln Gly Arg
 245 250 255

 Ser Ala Gln Asn Met Phe Ala Phe Leu Ala Asp Ser Pro Ile Val Ala
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 35 40 45

Leu Ala Ser Ala Asp Thr Pro Val Tyr Gly Ile Ser Thr Gly Phe Gly
 50 55 60

Ala Leu Ala Thr Arg His Ile Ala Pro Glu Asp Arg Ala Lys Leu Gln
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Arg Ser Leu Ile Arg Ser His Ala Ala Gly Met Gly Glu Pro Val Glu
 85 90 95

Arg Glu Val Val Arg Ala Leu Met Phe Leu Arg Ala Lys Thr Leu Ala
 100 105 110

Ser Gly Arg Ser Val Arg Pro Val Val Leu Glu Thr Met Val Gly Met
 115 120 125

Leu Asn Ala Gly Ile Thr Pro Val Val Arg Glu Tyr Gly Ser Leu Gly
 130 135 140

Cys Ser Gly Asp Leu Ala Pro Leu Ser His Cys Ala Leu Val Leu Met
 145 150 155 160

Gly Glu Gly Glu Ala Thr Asp Ala His Gly Asp Ile Arg Pro Val Pro
 165 170 175

Glu Leu Phe Ala Glu Ala Gly Leu Thr Pro Val Glu Leu Ala Glu Lys
 180 185 190

Glu Gly Leu Ala Leu Val Asn Gly Thr Asp Gly Met Leu Gly Gln Leu
 195 200 205

Ile Met Ala Leu Ala Asp Leu Asp Glu Leu Leu Asp Ile Ala Asp Ala
 210 215 220

Thr Ala Ala Met Ser Val Glu Ala Gln Leu Gly Thr Asp Gln Val Phe
 225 230 235 240

Arg Ala Glu Leu His Glu Pro Leu Arg Pro His Pro Gly Gln Gly Arg
 245 250 255

Ser Ala Gln Asn Met Phe Ala Phe Leu Ala Asp Ser Pro Ile Val Ala
 260 265 270

Ser His Arg Glu Gly Asp Gly Arg Val Gln Asp Ala Tyr Ser Leu Arg
 275 280 285

Cys Ser Pro Gln Val Thr Gly Ala Ala Arg Asp Thr Ile Ala His Ala
 290 295 300

Arg Leu Val Ala Thr Arg Glu Leu Ala Ala Ile Asp Asn Pro Val
 305 310 315 320

Val Leu Pro Ser Gly Glu Val Thr Ser Asn Gly Asn Phe His Gly Ala
 325 330 335

Pro Val Ala Tyr Val Leu Asp Phe Leu Ala Ile Ala Val Ala Asp Leu
 340 345 350

Gly Ser Ile Ala Glu Arg Arg Thr Asp Arg Met Leu Asp Pro Ala Arg
 355 360 365

Ser Arg Asp Leu Pro Ala Phe Leu Ala Asp Asp Pro Gly Val Asp Ser
 370 375 380

Gly Met Met Ile Ala Gln Tyr Thr Gln Ala Gly Leu Val Ala Glu Asn
 385 390 395 400

Lys Arg Leu Ala

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Pro Gln Val Leu Glu Glu Leu Ala Ser Val Arg Ala His Ile Asp Ala
 35 40 45

Leu Ala Ser Ala Asp Thr Pro Val Tyr Gly Ile Ser Thr Gly Phe Gly
 50 55 60

Ala Leu Ala Thr Arg His Ile Ala Pro Glu Asp Arg Ala Lys Leu Gln
 65 70 75 80

Arg Ser Leu Ile Arg Ser His Ala Ala Gly Met Gly Glu Pro Val Glu
 85 90 95

Arg Glu Val Val Arg Ala Leu Met Phe Leu Arg Ala Lys Thr Leu Ala
 100 105 110

Ser Gly Arg Ser Val Arg Pro Val Val Leu Glu Thr Met Val Gly Met
 115 120 125

Leu Asn Ala Gly Ile Thr Pro Val Val Arg Glu Tyr Gly Ser Leu Gly
 130 135 140

Cys Ser Gly Asp Leu Ala Pro Leu Ser His Cys Ala Leu Val Leu Met
 145 150 155 160

Gly Glu Gly Glu Ala Thr Asp Ala His Gly Asp Ile Arg Pro Val Pro
 165 170 175

Glu Leu Phe Ala Glu Ala Gly Leu Thr Pro Val Glu Leu Ala Glu Lys
 180 185 190

Glu Gly Leu Ala Leu Val Asn Gly Thr Asp Gly Met Leu Gly Gln Leu
 195 200 205

Ile Met Ala Leu Ala Asp Leu Asp Glu Leu Leu Asp Ile Ala Asp Ala
 210 215 220

Thr Ala Ala Met Ser Val Glu Ala Gln Leu Gly Thr Asp Gln Val Phe
 225 230 235 240

Arg Ala Glu Leu His Glu Pro Leu Arg Pro His Pro Gly Gln Gly Arg
 245 250 255

Ser Ala Gln Asn Met Phe Ala Phe Leu Ala Asp Ser Pro Ile Val Ala
 260 265 270

Ser His Arg Glu Gly Asp Gly Arg Val Gln Asp Ala Tyr Ser Leu Arg
 275 280 285

Cys Ser Pro Gln Val Thr Gly Ala Ala Arg Asp Thr Ile Ala His Ala
 290 295 300

Arg Leu Val Ala Thr Arg Glu Leu Ala Ala Ile Asp Asn Pro Val
 305 310 315 320

Val Leu Pro Ser Gly Glu Val Thr Ser Asn Gly Asn Phe His Gly Ala
 325 330 335

Pro Val Ala Tyr Val Leu Asp Phe Leu Ala Ile Ala Val Ala Asp Leu
 340 345 350

Gly Ser Ile Ala Glu Arg Arg Thr Asp Arg Met Leu Asp Pro Ala Arg
 355 360 365

Ser Arg Asp Leu Pro Ala Phe Leu Ala Asp Asp Pro Gly Val Asp Ser
 370 375 380

Gly Met Met Ile Ala Gln Tyr Thr Gln Ala Gly Leu Val Ala Glu Asn
 385 390 395 400

Lys Arg Leu Ala Val Pro Ala Val Asp Ser Ile Pro Ser Ser Ala Met
 405 410 415

Gln Glu Asp His Val Ser Leu Gly Trp His Ala Ala Arg Lys Leu Pro
 420 425 430

Thr Ser Val Ala Asn Leu Arg Arg Ile Leu Ala Val Glu Met Leu Ile
 435 440 445

Ala Gly Arg Ala Leu Asp Leu Arg Ala Pro Leu Lys Pro Gly Pro Ala
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Thr Gly Ala Val Leu Glu Val Leu Arg Ser Lys Val Ala Gly Pro Gly
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Leu Ala Xaa Xaa Xaa Xaa Pro Val Tyr Gly Xaa Ser Thr Gly Phe Gly
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Ala Leu Ala Xaa Arg His Ile Xaa Xaa Glu Xaa Arg Ala Xaa Leu Gln
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Arg Xaa Xaa Xaa Arg Ser His Ala Ala Gly Met Gly Xaa Xaa Val Glu
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Arg Glu Val Val Arg Ala Leu Met Phe Leu Arg Xaa Lys Thr Xaa Ala
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Ser Gly Xaa Xaa Val Arg Pro Xaa Val Xaa Xaa Thr Met Xaa Gly Xaa
115 120 125
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130 135 140
Cys Ser Gly Asp Leu Ala Pro Leu Ser His Cys Ala Leu Val Leu Met
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Glu Leu Xaa Ala Xaa Xaa Gly Xaa Xaa Pro Val Glu Leu Xaa Glu Lys
180 185 190
Glu Gly Leu Ala Leu Xaa Asn Gly Thr Asp Gly Met Leu Gly Xaa Leu
195 200 205
Xaa Met Ala Leu Ala Asp Leu Xaa Xaa Leu Xaa Xaa Xaa Ala Asp Xaa
210 215 220
Thr Ala Ala Xaa Ser Xaa Glu Ala Xaa Leu Gly Thr Asp Xaa Val Xaa
225 230 235 240

Xaa Xaa Glu Leu His Xaa Xaa Xaa Arg Pro His Pro Gly Gln Gly Xaa
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 Ser Ala Xaa Asn Met Xaa Xaa Xaa Leu Ala Xaa Ser Xaa Xaa Xaa Xaa
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 Val Leu Pro Xaa Gly Xaa Val Xaa Ser Asn Gly Asn Phe His Gly Ala
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 340 345 350

 Gly Ser Ile Xaa Glu Arg Arg Thr Asp Arg Xaa Leu Asp Xaa Xaa Arg
 355 360 365

 Ser Xaa Xaa Leu Pro Xaa Phe Leu Ala Asp Asp Xaa Gly Val Asp Ser
 370 375 380

 Gly Xaa Met Ile Ala Gln Tyr Thr Gln Ala Xaa Leu Val Xaa Glu Xaa
 385 390 395 400

 Lys Arg Leu Ala Val Pro Ala Xaa Asp Ser Ile Pro Ser Ser Ala Met
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 Gln Asp Arg Phe Leu Xaa Xaa Xaa Leu Xaa Ala Ala Xaa Xaa Xaa Xaa
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<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide

<400> 23
atttgattca tatggcttcc gctcctc                                27

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<210> 24
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 24
atcttggatc cgaacatggt gcgttgca

28

<210> 25
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 25
agcaccagat cgatgcac

18

<210> 26
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 26
tggcatgggt gaaccggt

18

<210> 27
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 27
atcagcgttg aagcccgag

18

<210> 28
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 28
acgtgctgga cttccttg 18

<210> 29
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 29
gtgcataagg ccctcgaa 18

<210> 30
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 30
gagcttcgag ggccttat 18

<210> 31
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 31
cgagcaacgc agcgagta 18

<210> 32
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 32

Met Ala Leu Ala Asp Leu Asp Glu Leu Leu Asp Glu Ala
 1 5 10

<210> 33
 <211> 12
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic peptide

<400> 33
 Met Gly Glu Pro Val Glu Arg Glu Val Leu Arg Ala
 1 5 10

<210> 34
 <211> 509
 <212> PRT
 <213> Pseudomonas putida

<400> 34
 Thr Glu Leu Thr Leu Lys Pro Gly Thr Leu Thr Leu Ala Gln Leu Arg
 1 5 10 15

Ala Ile His Ala Ala Pro Val Arg Leu Gln Leu Asp Ala Ser Ala Ala
 20 25 30

Pro Ala Ile Asp Ala Ser Val Ala Cys Val Glu Gln Ile Ile Ala Glu
 35 40 45

Asp Arg Thr Ala Tyr Gly Ile Asn Thr Gly Phe Gly Leu Leu Ala Ser
 50 55 60

Thr Arg Ile Ala Ser His Asp Leu Glu Asn Leu Gln Arg Ser Leu Val
 65 70 75 80

Leu Ser His Ala Ala Gly Ile Gly Ala Pro Leu Asp Asp Asp Leu Val
 85 90 95

Arg Leu Ile Met Val Leu Lys Ile Asn Ser Leu Ser Arg Gly Phe Ser
 100 105 110

Gly Ile Arg Arg Lys Val Ile Asp Ala Leu Ile Ala Leu Val Asn Ala
 115 120 125

Glu Val Tyr Pro His Ile Pro Leu Lys Gly Ser Val Gly Ala Ser Gly
 130 135 140

Asp Leu Ala Pro Leu Ala Thr Met Ser Leu Val Leu Leu Gly Glu Gly
 145 150 155 160

Lys Ala Arg Tyr Lys Gly Gln Trp Leu Ser Ala Thr Glu Ala Leu Ala
 165 170 175

Val Ala Gly Leu Glu Pro Leu Thr Leu Ala Ala Lys Glu Gly Leu Ala
 180 185 190
 Leu Leu Asn Gly Thr Gln Ala Ser Thr Ala Tyr Ala Leu Arg Gly Leu
 195 200 205
 Phe Tyr Ala Glu Asp Leu Tyr Ala Ala Ala Ile Ala Cys Gly Gly Leu
 210 215 220
 Ser Val Glu Ala Val Leu Gly Ser Arg Ser Pro Phe Asp Ala Arg Ile
 225 230 235 240
 His Glu Ala Arg Gly Gln Arg Gly Gln Ile Asp Thr Ala Ala Cys Phe
 245 250 255
 Arg Asp Leu Leu Gly Asp Ser Ser Glu Val Ser Leu Ser His Lys Asn
 260 265 270
 Cys Asp Lys Val Gln Asp Pro Tyr Ser Leu Arg Cys Gln Pro Gln Val
 275 280 285
 Met Gly Ala Cys Leu Thr Gln Leu Arg Gln Ala Ala Glu Val Leu Gly
 290 295 300
 Ile Glu Ala Asn Ala Val Ser Asp Asn Pro Leu Val Phe Ala Ala Glu
 305 310 315 320
 Gly Asp Val Ile Ser Gly Gly Asn Phe His Ala Glu Pro Val Ala Met
 325 330 335
 Ala Ala Asp Asn Leu Ala Leu Ala Ile Ala Glu Ile Gly Ser Leu Ser
 340 345 350
 Glu Arg Arg Ile Ser Leu Met Met Asp Lys His Met Ser Gln Leu Pro
 355 360 365
 Pro Phe Leu Val Glu Asn Gly Gly Val Asn Ser Gly Phe Met Ile Ala
 370 375 380
 Gln Val Thr Ala Ala Ala Leu Ala Ser Glu Asn Lys Ala Leu Ser His
 385 390 395 400
 Pro His Ser Val Asp Ser Leu Pro Thr Ser Ala Asn Gln Glu Asp His
 405 410 415
 Val Ser Met Ala Pro Ala Ala Gly Lys Arg Leu Trp Glu Met Ala Glu
 420 425 430
 Asn Thr Arg Gly Val Pro Ala Ile Glu Trp Leu Gly Ala Cys Gln Gly
 435 440 445
 Leu Asp Leu Arg Lys Gly Leu Lys Thr Ser Ala Lys Leu Glu Lys Ala
 450 455 460
 Arg Gln Ala Leu Arg Ser Glu Val Ala His Tyr Asp Arg Asp Arg Phe
 465 470 475 480

Phe Ala Pro Asp Ile Glu Lys Ala Val Glu Leu Leu Ala Lys Gly Ser
 485 490 495

Leu Thr Gly Leu Leu Pro Ala Gly Val Leu Pro Ser Leu
 500 505

<210> 35
 <211> 511
 <212> PRT
 <213> Rhizobium meliloti

<400> 35
 Met Thr Val Ile Leu Arg Pro Gly Ser Val Pro Leu Ser Asp Leu Glu
 1 5 10 15

Thr Ile Tyr Trp Thr Gly Ala Pro Ala Arg Leu Asp Ala Ala Phe Asp
 20 25 30

Ala Gly Ile Ala Lys Ala Ala Ala Arg Ile Ala Glu Ile Val Ala Gly
 35 40 45

Asn Ala Pro Val Tyr Gly Ile Asn Thr Gly Phe Gly Lys Leu Ala Ser
 50 55 60

Ile Lys Ile Asp Ser Ser Asp Val Ala Thr Leu Gln Arg Asn Leu Ile
 65 70 75 80

Leu Ser His Cys Cys Gly Val Gly Gln Pro Leu Thr Glu Asp Ile Val
 85 90 95

Arg Leu Ile Met Ala Leu Lys Leu Ile Ser Leu Gly Arg Gly Ala Ser
 100 105 110

Gly Val Arg Leu Glu Leu Val Arg Leu Ile Glu Ala Met Leu Asp Lys
 115 120 125

Gly Val Ile Pro Leu Ile Pro Glu Lys Gly Ser Val Gly Ala Ser Gly
 130 135 140

Asp Leu Ala Pro Leu Ala His Met Ala Ala Val Met Met Gly His Gly
 145 150 155 160

Glu Ala Phe Phe Ala Gly Glu Arg Met Lys Gly Asp Ala Ala Leu Lys
 165 170 175

Ala Ala Gly Leu Ser Pro Val Thr Leu Ala Ala Lys Glu Gly Leu Ala
 180 185 190

Leu Ile Asn Gly Thr Gln Val Ser Thr Ala Leu Ala Leu Ala Gly Leu
 195 200 205

Phe Arg Ala His Arg Ala Gly Gln Ala Ala Leu Ile Thr Gly Ala Leu
 210 215 220

Ser Thr Asp Ala Ala Met Gly Ser Ser Ala Pro Phe His Pro Asp Ile
 225 230 235 240

Gln His Cys Ala Ala Ile Arg Ala Arg Ser Thr Arg Ala Ala Ala Leu
 245 250 255

Arg Gln Leu Leu Thr Gly Ser Pro Ile Arg Gln Ser His Ile Glu Gly
 260 265 270

Asp Glu Arg Val Gln Asp Pro Tyr Cys Ile Arg Cys Gln Pro Gln Val
 275 280 285

Asp Gly Ala Cys Leu Asp Leu Leu Arg Ser Val Ala Ala Thr Leu Thr
 290 295 300

Ile Glu Ala Asn Ala Val Thr Asp Asn Pro Leu Val Leu Ser Asp Asn
 305 310 315 320

Ser Val Val Ser Gly Gly Asn Phe His Ala Glu Pro Val Ala Phe Ala
 325 330 335

Ala Asp Gln Ile Ala Leu Ala Val Cys Glu Ile Gly Ala Ile Ser Gln
 340 345 350

Arg Arg Ile Ala Leu Leu Val Asp Pro Ala Leu Ser Leu Arg Leu Pro
 355 360 365

Ala Phe Leu Ala Lys Lys Pro Gly Leu Asn Ser Gly Leu Met Ile Ala
 370 375 380

Glu Val Thr Ser Ala Ala Leu Met Ser Glu Asn Lys Gln Leu Ser His
 385 390 395 400

Pro Ala Ser Val Asp Ser Thr Pro Thr Ser Ala Asn Gln Glu Asp His
 405 410 415

Val Ser Met Ala Cys His Gly Ala Arg Arg Leu Leu Gln Met Thr Glu
 420 425 430

Asn Leu Phe Ser Ile Ile Gly Ile Glu Ala Leu Ala Ala Val Gln Gly
 435 440 445

Ile Glu Phe Arg Ala Pro Leu Thr Thr Ser Pro Glu Leu Gln Lys Ala
 450 455 460

Ala Ala Ala Val Arg Gly Val Ser Ser Ser Ile Glu Glu Asp Arg Tyr
 465 470 475 480

Met Ala Asp Asp Leu Lys Ala Ala Gly Asp Leu Val Ala Ser Gly Arg
 485 490 495

Leu Ala Ala Ala Val Ser Ala Gly Ile Leu Pro Lys Leu Glu Asn
 500 505 510

<210> 36

<211> 657

<212> PRT

<213> Mus sp.

<400> 36

Met	Pro	Arg	Tyr	Thr	Val	His	Val	Arg	Gly	Glu	Trp	Leu	Ala	Val	Pro
1				5				10						15	
Cys	Gln	Asp	Gly	Lys	Leu	Thr	Val	Gly	Trp	Leu	Gly	Arg	Glu	Ala	Val
				20			25						30		
Arg	Arg	Tyr	Met	Lys	Asn	Lys	Pro	Asp	Asn	Gly	Gly	Phe	Thr	Ser	Val
			35				40					45			
Asp	Glu	Val	Gln	Phe	Leu	Val	His	Arg	Cys	Lys	Gly	Leu	Gly	Leu	Leu
			50			55				60					
Asp	Asn	Glu	Asp	Glu	Leu	Glu	Val	Ala	Leu	Glu	Asp	Asn	Glu	Phe	Val
			65		70				75				80		
Glu	Val	Val	Ile	Glu	Gly	Asp	Val	Met	Ser	Pro	Asp	Phe	Ile	Pro	Ser
			85				90					95			
Gln	Pro	Glu	Gly	Val	Phe	Leu	Tyr	Ser	Lys	Tyr	Arg	Glu	Pro	Glu	Lys
			100			105					110				
Tyr	Ile	Ala	Leu	Asp	Gly	Asp	Ser	Leu	Ser	Thr	Glu	Asp	Leu	Val	Asn
			115			120				125					
Leu	Gly	Lys	Gly	Arg	Tyr	Lys	Ile	Lys	Leu	Thr	Ser	Ile	Ala	Glu	Lys
			130			135				140					
Lys	Val	Gln	Gln	Ser	Arg	Glu	Val	Ile	Asp	Ser	Ile	Ile	Lys	Glu	Arg
			145			150			155				160		
Thr	Val	Val	Tyr	Gly	Ile	Thr	Thr	Gly	Phe	Gly	Lys	Phe	Ala	Arg	Thr
			165				170				175				
Val	Ile	Pro	Ala	Asn	Lys	Leu	Gln	Glu	Leu	Gln	Val	Asn	Leu	Val	Arg
			180			185					190				
Ser	His	Ser	Ser	Gly	Val	Gly	Lys	Pro	Leu	Ser	Pro	Glu	Arg	Cys	Arg
			195			200				205					
Met	Leu	Leu	Ala	Leu	Arg	Ile	Asn	Val	Leu	Ala	Lys	Gly	Tyr	Ser	Gly
			210			215				220					
Ile	Ser	Leu	Glu	Thr	Leu	Lys	Gln	Val	Ile	Glu	Ala	Phe	Asn	Ala	Ser
			225			230				235			240		
Cys	Leu	Ser	Tyr	Val	Pro	Glu	Lys	Gly	Thr	Val	Gly	Ala	Ser	Gly	Asp
			245			250				255					
Leu	Ala	Pro	Leu	Ser	His	Leu	Ala	Leu	Gly	Leu	Ile	Gly	Glu	Gly	Lys
			260			265					270				
Met	Trp	Ser	Pro	Lys	Ser	Gly	Trp	Ala	Asp	Ala	Lys	Tyr	Val	Leu	Glu
			275			280				285					
Ala	His	Gly	Leu	Lys	Pro	Ile	Val	Leu	Lys	Pro	Lys	Glu	Gly	Leu	Ala
			290			295				300					

Leu Ile Asn Gly Thr Gln Met Ile Thr Ser Leu Gly Cys Glu Ala Leu
 305 310 315 320

Glu Arg Ala Ser Ala Ile Ala Arg Gln Ala Asp Ile Val Ala Ala Leu
 325 330 335

Thr Leu Glu Val Leu Lys Gly Thr Thr Lys Ala Phe Asp Thr Asp Ile
 340 345 350

His Ala Val Arg Pro His Arg Gly Gln Ile Glu Val Ala Phe Arg Phe
 355 360 365

Arg Ser Leu Leu Asp Ser Asp His His Pro Ser Glu Ile Ala Glu Ser
 370 375 380

His Arg Phe Cys Asp Arg Val Gln Asp Ala Tyr Thr Leu Arg Cys Cys
 385 390 395 400

Pro Gln Val His Gly Val Val Asn Asp Thr Ile Ala Phe Val Lys Asp
 405 410 415

Ile Ile Thr Thr Glu Leu Asn Ser Ala Thr Asp Asn Pro Met Val Phe
 420 425 430

Ala Ser Arg Gly Glu Thr Ile Ser Gly Gly Asn Phe His Gly Glu Tyr
 435 440 445

Pro Ala Lys Ala Leu Asp Tyr Leu Ala Ile Gly Val His Glu Leu Ala
 450 455 460

Ala Ile Ser Glu Arg Arg Ile Glu Arg Leu Cys Asn Pro Ser Leu Ser
 465 470 475 480

Glu Leu Pro Ala Phe Leu Val Ala Glu Gly Leu Asn Ser Gly Phe
 485 490 495

Met Ile Ala His Cys Thr Ala Ala Leu Val Ser Glu Ser Lys Ala
 500 505 510

Leu Cys His Pro Ser Ser Val Asp Ser Leu Ser Thr Ser Ala Ala Thr
 515 520 525

Glu Asp His Val Ser Met Gly Gly Trp Ala Ala Arg Lys Ala Leu Arg
 530 535 540

Val Val Glu His Val Glu Gln Val Leu Ala Ile Glu Leu Leu Ala Ala
 545 550 555 560

Cys Gln Gly Ile Glu Phe Leu Arg Pro Leu Lys Thr Thr Thr Pro Leu
 565 570 575

Glu Lys Val Tyr Asp Leu Val Arg Ser Val Val Arg Pro Trp Ile Lys
 580 585 590

Asp Arg Phe Met Ala Pro Asp Ile Glu Ala Ala His Arg Leu Leu Leu
 595 600 605

Asp Gln Lys Val Trp Glu Val Ala Ala Pro Tyr Ile Glu Lys Tyr Arg
 610 615 620

Met Glu His Ile Pro Glu Ser Arg Pro Leu Ser Pro Thr Ala Phe Ser
 625 630 635 640

Leu Glu Ser Leu Arg Lys Asn Ser Ala Thr Ile Pro Glu Ser Asp Asp
 645 650 655

Leu

<210> 37
 <211> 657
 <212> PRT
 <213> Rattus sp.

<400> 37
 Met Pro Arg Tyr Thr Val His Val Arg Gly Glu Trp Leu Ala Val Pro
 1 5 10 15

Cys Gln Asp Gly Lys Leu Ser Val Gly Trp Leu Gly Arg Glu Ala Val
 20 25 30

Arg Arg Tyr Met Lys Asn Lys Pro Asp Asn Gly Gly Phe Thr Ser Val
 35 40 45

Asp Glu Val Arg Phe Leu Val Arg Arg Cys Lys Gly Leu Gly Leu Leu
 50 55 60

Asp Asn Glu Asp Leu Leu Glu Val Ala Leu Glu Asp Asn Glu Phe Val
 65 70 75 80

Glu Val Val Ile Glu Gly Asp Val Met Ser Pro Asp Phe Ile Pro Ser
 85 90 95

Gln Pro Glu Gly Val Phe Leu Tyr Ser Lys Tyr Arg Glu Pro Glu Lys
 100 105 110

Tyr Ile Ala Leu Asp Gly Asp Ser Leu Ser Thr Glu Asp Leu Val Asn
 115 120 125

Leu Gly Lys Gly His Tyr Lys Ile Lys Leu Thr Ser Ile Ala Glu Lys
 130 135 140

Lys Val Gln Gln Ser Arg Glu Val Ile Asp Ser Ile Ile Lys Glu Arg
 145 150 155 160

Thr Val Val Tyr Gly Ile Thr Thr Gly Phe Gly Lys Phe Ala Arg Thr
 165 170 175

Val Ile Pro Ala Asn Lys Leu Gln Glu Leu Gln Val Asn Leu Val Arg
 180 185 190

Ser His Ser Ser Gly Val Gly Lys Pro Leu Ser Pro Glu Arg Cys Arg
 195 200 205

Met Leu Leu Ala Leu Arg Ile Asn Val Leu Ala Lys Gly Tyr Ser Gly
 210 215 220
 Ile Ser Leu Glu Thr Leu Lys Gln Val Ile Glu Val Phe Asn Ala Ser
 225 230 235 240
 Cys Leu Ser Tyr Val Pro Glu Lys Gly Thr Val Gly Ala Ser Gly Asp
 245 250 255
 Leu Ala Pro Leu Ser His Leu Ala Leu Gly Leu Ile Gly Glu Gly Lys
 260 265 270
 Met Trp Ser Pro Lys Ser Gly Trp Ala Asp Ala Lys Tyr Val Leu Glu
 275 280 285
 Ala His Gly Leu Lys Pro Ile Val Leu Lys Pro Lys Glu Gly Leu Ala
 290 295 300
 Leu Ile Asn Gly Thr Gln Met Ile Thr Ser Leu Gly Cys Glu Ala Val
 305 310 315 320
 Glu Arg Ala Ser Ala Ile Ala Arg Gln Ala Asp Ile Val Ala Ala Leu
 325 330 335
 Thr Leu Glu Val Leu Lys Gly Thr Thr Lys Ala Phe Asp Thr Asp Ile
 340 345 350
 His Ala Val Arg Pro His Arg Gly Gln Ile Glu Val Ala Phe Arg Phe
 355 360 365
 Arg Ser Leu Leu Asp Ser Asp His His Pro Ser Glu Ile Ala Glu Ser
 370 375 380
 His Arg Phe Cys Asp Arg Val Gln Asp Ala Tyr Thr Leu Arg Cys Cys
 385 390 395 400
 Pro Gln Val His Gly Val Val Asn Asp Thr Ile Ala Phe Val Lys Asp
 405 410 415
 Ile Ile Thr Thr Glu Leu Asn Ser Ala Thr Asp Asn Pro Met Val Phe
 420 425 430
 Ala Ser Arg Gly Glu Thr Ile Ser Gly Gly Asn Phe His Gly Glu Tyr
 435 440 445
 Pro Ala Lys Ala Leu Asp Tyr Leu Ala Ile Gly Val His Glu Leu Ala
 450 455 460
 Ala Ile Ser Glu Arg Arg Ile Glu Arg Leu Cys Asn Pro Ser Leu Ser
 465 470 475 480
 Glu Leu Pro Ala Phe Leu Val Ala Glu Gly Gly Leu Asn Ser Gly Phe
 485 490 495
 Met Ile Ala His Cys Thr Ala Ala Leu Val Ser Glu Ser Lys Ala
 500 505 510

Leu Cys His Pro Ser Ser Val Asp Ser Leu Ser Thr Ser Ala Ala Thr
 515 520 525

Glu Asp His Val Ser Met Gly Gly Trp Ala Ala Arg Lys Ala Leu Arg
 530 535 540

Val Ile Glu His Val Glu Gln Val Leu Ala Ile Glu Leu Leu Ala Ala
 545 550 555 560

Cys Gln Gly Ile Glu Phe Leu Arg Pro Leu Lys Thr Thr Thr Pro Leu
 565 570 575

Glu Lys Val Tyr Asp Leu Val Arg Ser Val Val Arg Pro Trp Ile Lys
 580 585 590

Asp Arg Phe Met Ala Pro Asp Ile Glu Ala Ala His Arg Leu Leu Leu
 595 600 605

Asp Gln Lys Val Trp Glu Val Ala Ala Pro Tyr Ile Glu Lys Tyr Arg
 610 615 620

Met Glu His Ile Pro Glu Ser Arg Pro Leu Ser Pro Thr Ala Phe Ser
 625 630 635 640

Leu Glu Ser Leu Arg Lys Asn Ser Ala Thr Ile Pro Glu Ser Asp Asp
 645 650 655

Leu

<210> 38
<211> 635
<212> PRT
<213> Homo sapiens

<400> 38
Met Pro Arg Tyr Thr Val His Val Arg Gly Glu Trp Leu Ala Val Pro
1 5 10 15

Cys Gln Asp Ala Gln Leu Thr Val Gly Trp Leu Gly Arg Glu Ala Val
20 25 30

Arg Arg Tyr Ile Lys Asn Lys Pro Asp Asn Gly Gly Phe Thr Ser Val
35 40 45

Asp Asp Ala His Phe Leu Val Arg Arg Cys Lys Gly Leu Gly Leu Leu
50 55 60

Asp Asn Glu Asp Arg Leu Glu Val Ala Leu Glu Asn Asn Glu Phe Val
65 70 75 80

Glu Val Val Ile Glu Gly Asp Ala Met Ser Pro Asp Phe Ile Pro Ser
85 90 95

Gln Pro Glu Gly Val Tyr Leu Tyr Ser Lys Tyr Arg Glu Pro Glu Lys
100 105 110

Tyr Ile Glu Leu Asp Gly Asp Arg Leu Thr Thr Glu Asp Leu Val Asn
 115 120 125

Leu Gly Lys Gly Arg Tyr Lys Ile Lys Leu Thr Pro Thr Ala Glu Lys
 130 135 140

Arg Val Gln Lys Ser Arg Glu Val Ile Asp Ser Ile Ile Lys Glu Lys
 145 150 155 160

Thr Val Val Tyr Gly Ile Thr Thr Gly Phe Gly Lys Phe Ala Arg Thr
 165 170 175

Val Ile Pro Ile Asn Lys Leu Gln Glu Leu Gln Val Asn Leu Val Arg
 180 185 190

Ser His Ser Ser Gly Val Gly Lys Pro Leu Ser Pro Glu Arg Cys Arg
 195 200 205

Met Leu Leu Ala Leu Arg Ile Asn Val Leu Ala Lys Gly Tyr Ser Gly
 210 215 220

Ile Ser Leu Glu Thr Leu Lys Gln Val Ile Glu Met Phe Asn Ala Ser
 225 230 235 240

Cys Leu Pro Tyr Val Pro Glu Lys Gly Thr Val Gly Ala Ser Gly Asp
 245 250 255

Leu Ala Pro Leu Ser His Leu Ala Leu Gly Leu Val Gly Glu Gly Lys
 260 265 270

Met Trp Ser Pro Lys Ser Gly Trp Ala Asp Ala Lys Tyr Val Leu Glu
 275 280 285

Ala His Gly Leu Lys Pro Val Ile Leu Lys Pro Lys Glu Gly Leu Ala
 290 295 300

Leu Ile Asn Gly Thr Gln Met Ile Thr Ser Leu Gly Cys Glu Ala Val
 305 310 315 320

Glu Arg Ala Ser Ala Ile Ala Arg Gln Ala Asp Ile Val Ala Ala Leu
 325 330 335

Thr Leu Glu Val Leu Lys Gly Thr Thr Lys Ala Phe Asp Thr Asp Ile
 340 345 350

His Ala Leu Arg Pro His Arg Gly Gln Ile Glu Val Ala Phe Arg Phe
 355 360 365

Arg Ser Leu Leu Asp Ser Leu Arg Cys Cys Pro Gln Val His Gly Val
 370 375 380

Val Asn Asp Thr Ile Ala Phe Val Lys Asn Ile Ile Thr Thr Glu Leu
 385 390 395 400

Asn Ser Ala Thr Asp Asn Pro Met Val Phe Ala Asn Arg Gly Glu Thr
 405 410 415

Val Ser Gly Gly Asn Phe His Gly Glu Tyr Pro Ala Lys Ala Leu Asp
 420 425 430
 Tyr Leu Ala Ile Gly Ile His Glu Leu Ala Ala Ile Ser Glu Arg Arg
 435 440 445
 Ile Glu Arg Leu Cys Asn Pro Ser Leu Ser Glu Leu Pro Ala Phe Leu
 450 455 460
 Val Ala Glu Gly Gly Leu Asn Ser Gly Phe Met Ile Ala His Cys Thr
 465 470 475 480
 Ala Ala Ala Leu Val Ser Glu Asn Lys Ala Leu Cys His Pro Ser Ser
 485 490 495
 Val Asp Ser Leu Ser Thr Ser Ala Ala Thr Glu Asp His Val Ser Met
 500 505 510
 Gly Gly Trp Ala Ala Arg Lys Ala Leu Arg Val Ile Glu His Val Glu
 515 520 525
 Gln Val Leu Ala Ile Glu Leu Leu Ala Ala Cys Gln Gly Ile Glu Phe
 530 535 540
 Leu Arg Pro Leu Lys Thr Thr Pro Leu Glu Lys Val Tyr Asp Leu
 545 550 555 560
 Val Arg Ser Val Val Arg Pro Trp Ile Lys Asp Arg Phe Met Ala Pro
 565 570 575
 Asp Ile Glu Ala Ala His Arg Leu Leu Glu Gln Lys Val Trp Glu
 580 585 590
 Val Ala Ala Pro Tyr Ile Glu Lys Tyr Arg Met Glu His Ile Pro Glu
 595 600 605
 Ser Arg Pro Leu Ser Pro Thr Ala Phe Ser Leu Gln Phe Leu His Lys
 610 615 620
 Lys Ser Thr Lys Ile Pro Glu Ser Glu Asp Leu
 625 630 635

 <210> 39
 <211> 677
 <212> PRT
 <213> Caenorhabditis elegans

 <400> 39
 Met Arg Leu Gln Val Gln Ile Gly Thr Glu Cys Val Val Val Pro Cys
 1 5 10 15
 Lys Pro Asp Asp Thr Ile His Ala Val Ala Lys Lys Ser Val Glu Lys
 20 25 30
 Leu Arg Arg Leu Arg Pro Lys Leu Pro Leu Ala Asp Asp Tyr Phe Glu
 35 40 45

Val Arg Arg Thr Val Gly Asn Ser Leu Leu Asp Pro Glu Asp Leu Val
 50 55 60

Ser Asp Val Leu Lys Asp Ser Asp Phe Ile Ile Val Ala Ala Ser Val
 65 70 75 80

Glu Glu Thr Glu Asp Ala Lys Glu Ala Lys Lys Gln Glu Glu Ile Asp
 85 90 95

Asn Ala Arg Ala Glu Ile Glu Lys Ile Asp Asn Arg Arg Lys Val
 100 105 110

Ser Phe Ala Asp Ser Leu Ala Pro Met Val Leu Ala Pro Pro Thr Lys
 115 120 125

Leu Leu Ile Leu Asp Gly Asn Ser Leu Leu Pro Glu Asp Leu Val Arg
 130 135 140

Cys Glu Lys Gly Glu Cys Ala Ile Gln Leu Ser Met Glu Ser Glu Asp
 145 150 155 160

Arg Ile Arg Lys Ala Arg Thr Phe Leu Glu Lys Ile Ala Ser Glu His
 165 170 175

Arg Ala Val Tyr Gly Val Thr Thr Gly Phe Gly Thr Phe Ser Asn Val
 180 185 190

Thr Ile Pro Pro Glu Lys Leu Lys Leu Gln Leu Asn Leu Ile Arg
 195 200 205

Ser His Ala Thr Gly Tyr Gly Glu Pro Leu Ala Pro Asn Arg Ala Arg
 210 215 220

Met Leu Leu Ala Leu Arg Ile Asn Ile Leu Ala Lys Gly His Ser Gly
 225 230 235 240

Ile Ser Val Glu Asn Ile Lys Lys Met Ile Ala Ala Phe Asn Ala Phe
 245 250 255

Cys Val Ser Tyr Val Pro Gln Gln Gly Thr Val Gly Cys Ser Gly Asp
 260 265 270

Leu Cys Pro Leu Ala His Leu Ala Leu Gly Leu Leu Gly Glu Gly Lys
 275 280 285

Met Trp Ser Pro Thr Thr Gly Trp Gln Pro Ala Asp Val Val Leu Lys
 290 295 300

Lys Asn Asn Leu Glu Pro Leu Glu Leu Gly Pro Lys Glu Gly Leu Ala
 305 310 315 320

Leu Ile Asn Gly Thr Gln Met Val Thr Ala Leu Gly Ala Tyr Thr Leu
 325 330 335

Glu Arg Ala His Asn Ile Ala Arg Gln Ala Asp Val Ile Ala Ala Leu
 340 345 350

Ser Leu Asp Val Leu Lys Gly Thr Thr Arg Ala Tyr Asp Pro Asp Ile
 355 360 365
 His Arg Ile Arg Pro His Arg Gly Gln Asn Leu Ser Ala Leu Arg Leu
 370 375 380
 Arg Ala Leu Leu His Ser Glu Ala Asn Pro Ser Gln Ile Ala Glu Ser
 385 390 395 400
 His Arg Asn Cys Thr Lys Val Gln Asp Ala Tyr Thr Leu Arg Cys Val
 405 410 415
 Pro Gln Val His Gly Val Val His Asp Thr Ile Glu Phe Val Arg Glu
 420 425 430
 Ile Ile Thr Thr Glu Met Asn Ser Ala Thr Asp Asn Pro Leu Val Phe
 435 440 445
 Ala Asp Arg Glu Glu Ile Ile Ser Gly Gly Asn Phe His Gly Glu Tyr
 450 455 460
 Pro Ala Lys Ala Leu Asp Phe Leu Ala Ile Ala Val Ala Glu Leu Ala
 465 470 475 480
 Gln Met Ser Glu Arg Arg Leu Glu Arg Leu Val Asn Lys Glu Leu Ser
 485 490 495
 Gly Leu Pro Thr Glu Leu Thr Pro Asp Gly Gly Leu Asn Ser Gly Phe
 500 505 510
 Met Thr Val Gln Leu Cys Ala Ala Ser Leu Val Ser Glu Asn Lys Val
 515 520 525
 Leu Cys His Pro Ser Ser Val Asp Ser Ile Pro Thr Ser Cys Asn Gln
 530 535 540
 Glu Asp His Val Ser Met Gly Gly Phe Ala Ala Arg Lys Ala Leu Thr
 545 550 555 560
 Val Val Glu His Val Glu Ala Val Leu Ala Met Glu Leu Leu Ala Ala
 565 570 575
 Cys Gln Gly Ile Glu Phe Leu Lys Pro Leu Ile Ser Thr Ala Pro Leu
 580 585 590
 His Lys Ile Tyr Gln Leu Val Arg Ser Val Ala Pro Pro Leu Asn Glu
 595 600 605
 Asp Arg Tyr Met Lys Pro Glu Ile Asp Ala Val Leu Glu Met Ile Arg
 610 615 620
 Glu Asn Arg Ile Trp Glu Ala Val Leu Pro His Leu Glu Thr Leu Glu
 625 630 635 640
 Ala Met Glu Glu Leu Asp Pro Asp Ala Leu Arg Gln Phe Thr Lys Thr
 645 650 655

Pro Thr Gly Ile Val Gln Asp Arg Ser Met Ile Pro Ile Ser Asp Asp
 660 665 670

Glu Glu Ser Ile Glu
 675

<210> 40
 <211> 508
 <212> PRT
 <213> Bacillus subtilis

<400> 40
 Met Val Thr Leu Asp Gly Ser Ser Leu Thr Thr Ala Asp Val Ala Arg
 1 5 10 15

Val Leu Phe Asp Phe Glu Glu Ala Ala Ala Ser Glu Glu Ser Met Glu
 20 25 30

Arg Val Lys Lys Ser Arg Ala Ala Val Glu Arg Ile Val Arg Asp Glu
 35 40 45

Lys Thr Ile Tyr Gly Ile Asn Thr Gly Phe Gly Lys Phe Ser Asp Val
 50 55 60

Leu Ile Gln Lys Glu Asp Ser Ala Ala Leu Gln Leu Asn Leu Ile Leu
 65 70 75 80

Ser His Ala Cys Gly Val Gly Asp Pro Phe Pro Glu Cys Val Ser Arg
 85 90 95

Ala Met Leu Leu Leu Arg Ala Asn Ala Leu Leu Lys Gly Phe Ser Gly
 100 105 110

Val Arg Ala Glu Leu Ile Glu Gln Leu Leu Ala Phe Leu Asn Lys Arg
 115 120 125

Val His Pro Val Ile Pro Gln Gln Gly Ser Leu Gly Ala Ser Gly Asp
 130 135 140

Leu Ala Pro Leu Ser His Leu Ala Leu Ala Leu Ile Gly Gln Gly Glu
 145 150 155 160

Val Phe Phe Glu Gly Glu Arg Met Pro Ala Met Thr Gly Leu Lys Lys
 165 170 175

Ala Gly Ile Gln Pro Val Thr Leu Thr Ser Lys Glu Gly Leu Ala Leu
 180 185 190

Ile Asn Gly Thr Gln Ala Met Thr Ala Met Gly Val Val Ala Tyr Ile
 195 200 205

Glu Ala Glu Lys Leu Ala Tyr Gln Thr Glu Arg Ile Ala Ser Leu Thr
 210 215 220

Ile Glu Gly Leu Gln Gly Ile Ile Asp Ala Phe Asp Glu Asp Ile His
 225 230 235 240

Leu Ala Arg Gly Tyr Gln Glu Gln Ile Asp Val Ala Glu Arg Ile Arg
 245 250 255
 Phe Tyr Leu Ser Asp Ser Gly Leu Thr Thr Ser Gln Gly Glu Leu Arg
 260 265 270
 Val Gln Asp Ala Tyr Ser Leu Arg Cys Ile Pro Gln Val His Gly Ala
 275 280 285
 Thr Trp Gln Thr Leu Gly Tyr Val Lys Glu Lys Leu Glu Ile Glu Met
 290 295 300
 Asn Ala Ala Thr Asp Asn Pro Leu Ile Phe Asn Asp Gly Asp Lys Val
 305 310 315 320
 Ile Ser Gly Gly Asn Phe His Gly Gln Pro Ile Ala Phe Ala Met Asp
 325 330 335
 Phe Leu Lys Ile Ala Ile Ser Glu Leu Ala Asn Ile Ala Glu Arg Arg
 340 345 350
 Ile Glu Arg Leu Val Asn Pro Gln Leu Asn Asp Leu Pro Pro Phe Leu
 355 360 365
 Ser Pro His Pro Gly Leu Gln Ser Gly Ala Met Ile Met Gln Tyr Ala
 370 375 380
 Ala Ala Ser Leu Val Ser Glu Asn Lys Thr Leu Ala His Pro Ala Ser
 385 390 395 400
 Val Asp Ser Ile Pro Ser Ser Ala Asn Gln Glu Asp His Val Ser Met
 405 410 415
 Gly Thr Ile Ala Ala Arg His Ala Tyr Gln Val Ile Ala Asn Thr Arg
 420 425 430
 Arg Val Ile Ala Ile Glu Ala Ile Cys Ala Leu Gln Ala Val Glu Tyr
 435 440 445
 Arg Gly Ile Glu His Ala Ala Ser Tyr Thr Lys Gln Leu Phe Gln Glu
 450 455 460
 Met Arg Lys Val Val Pro Ser Ile Gln Gln Asp Arg Val Phe Ser Tyr
 465 470 475 480
 Asp Ile Glu Arg Leu Thr Asp Trp Leu Lys Lys Glu Ser Leu Ile Pro
 485 490 495
 Asp His Gln Asn Lys Glu Leu Arg Gly Met Asn Ile
 500 505

<210> 41
 <211> 516
 <212> PRT
 <213> Streptomyces griseus

<400> 41
 Met Asp Met His Thr Val Val Val Gly Thr Ser Gly Thr Thr Ala Glu
 1 5 10 15
 Asp Val Val Ala Val Ala Arg His Gly Ala Arg Val Glu Leu Ser Ala
 20 25 30
 Ala Ala Val Glu Ala Leu Ala Ala Arg Leu Ile Val Asp Ala Leu
 35 40 45
 Ala Ala Lys Pro Glu Pro Val Tyr Gly Val Ser Thr Gly Phe Gly Ala
 50 55 60
 Leu Ala Ser Arg His Ile Gly Thr Glu Leu Arg Ala Gln Leu Gln Arg
 65 70 75 80
 Asn Ile Val Arg Ser His Ala Ala Gly Met Gly Pro Arg Val Glu Arg
 85 90 95
 Glu Val Val Arg Ala Leu Met Phe Leu Arg Leu Lys Thr Val Ala Ser
 100 105 110
 Gly His Thr Gly Val Arg Pro Glu Val Ala Gln Thr Met Ala Asp Val
 115 120 125
 Leu Asn Ala Gly Ile Thr Pro Val Val His Glu Tyr Gly Ser Leu Gly
 130 135 140
 Cys Ser Gly Asp Leu Ala Pro Leu Ser His Cys Ala Leu Thr Leu Met
 145 150 155 160
 Gly Glu Gly Glu Ala Glu Gly Pro Asp Gly Thr Val Arg Pro Ala Gly
 165 170 175
 Glu Leu Leu Ala Ala His Gly Ile Ala Pro Val Glu Leu Arg Glu Lys
 180 185 190
 Glu Gly Leu Ala Leu Leu Asn Gly Thr Asp Gly Met Leu Gly Met Leu
 195 200 205
 Val Met Ala Leu Ala Asp Leu Arg Asn Leu Tyr Thr Ser Ala Asp Ile
 210 215 220
 Thr Ala Ala Leu Ser Leu Glu Ala Leu Leu Gly Thr Asp Lys Val Leu
 225 230 235 240
 Ala Pro Glu Leu His Ala Ile Arg Pro His Pro Gly Gln Gly Val Ser
 245 250 255
 Ala Asp Asn Met Ser Arg Val Leu Ala Gly Ser Gly Leu Thr Gly His
 260 265 270
 His Gln Asp Asp Ala Pro Arg Val Gln Asp Ala Tyr Ser Val Arg Cys
 275 280 285
 Ala Pro Gln Val Asn Gly Ala Gly Arg Asp Thr Leu Asp His Ala Ala
 290 295 300

Leu Val Ala Gly Arg Glu Leu Ala Ser Ser Val Asp Asn Pro Val Val
 305 310 315 320

Leu Pro Asp Gly Arg Val Glu Ser Asn Gly Asn Phe His Gly Ala Pro
 325 330 335

Val Ala Tyr Val Leu Asp Phe Leu Ala Ile Val Ala Ala Asp Leu Gly
 340 345 350

Ser Ile Cys Glu Arg Arg Thr Asp Arg Leu Leu Asp Lys Asn Arg Ser
 355 360 365

His Gly Leu Pro Pro Phe Leu Ala Asp Asp Ala Gly Val Asp Ser Gly
 370 375 380

Leu Met Ile Ala Gln Tyr Thr Gln Ala Ala Leu Val Ser Glu Met Lys
 385 390 395 400

Arg Leu Ala Val Pro Ala Ser Ala Asp Ser Ile Pro Ser Ser Ala Met
 405 410 415

Gln Glu Asp His Val Ser Met Gly Trp Ser Ala Ala Arg Lys Leu Arg
 420 425 430

Thr Ala Val Asp Asn Leu Ala Arg Ile Val Ala Val Glu Leu Tyr Ala
 435 440 445

Ala Thr Arg Ala Ile Glu Leu Arg Ala Ala Glu Gly Leu Thr Pro Ala
 450 455 460

Pro Ala Ser Glu Ala Val Val Ala Ala Leu Arg Ala Ala Gly Ala Glu
 465 470 475 480

Gly Pro Gly Pro Asp Arg Phe Leu Ala Pro Asp Leu Ala Ala Asp
 485 490 495

Thr Phe Val Arg Glu Gly Arg Leu Val Ala Ala Val Glu Pro Val Thr
 500 505 510

Gly Pro Leu Ala
 515

<210> 42
 <211> 511
 <212> PRT
 <213> Corynebacteriaceae sp.

<400> 42
 Met Ala Ser Ala Pro Gln Ile Thr Leu Gly Leu Ser Gly Ala Thr Ala
 1 5 10 15

Asp Asp Val Ile Ala Val Ala Arg His Glu Ala Arg Ile Ser Ile Ser
 20 25 30

Pro Gln Val Leu Glu Glu Leu Ala Ser Val Arg Ala His Ile Asp Ala
 35 40 45

Leu Ala Ser Ala Asp Thr Pro Val Tyr Gly Ile Ser Thr Gly Phe Gly
 50 55 60

Ala Leu Ala Thr Arg His Ile Ala Pro Glu Asp Arg Ala Lys Leu Gln
 65 70 75 80

Arg Ser Leu Ile Arg Ser His Ala Ala Gly Met Gly Glu Pro Val Glu
 85 90 95

Arg Glu Val Val Arg Ala Leu Met Phe Leu Arg Ala Lys Thr Leu Ala
 100 105 110

Ser Gly Arg Ser Val Arg Pro Val Val Leu Glu Thr Met Val Gly Met
 115 120 125

Leu Asn Ala Gly Ile Thr Pro Val Val Arg Glu Tyr Gly Ser Leu Gly
 130 135 140

Cys Ser Gly Asp Leu Ala Pro Leu Ser His Cys Ala Leu Val Leu Met
 145 150 155 160

Gly Glu Gly Glu Ala Thr Asp Ala His Gly Asp Ile Arg Pro Val Pro
 165 170 175

Glu Leu Phe Ala Glu Ala Gly Leu Thr Pro Val Glu Leu Ala Glu Lys
 180 185 190

Glu Gly Leu Ala Leu Val Asn Gly Thr Asp Gly Met Leu Gly Gln Leu
 195 200 205

Ile Met Ala Leu Ala Asp Leu Asp Glu Leu Asp Ile Ala Asp Ala
 210 215 220

Thr Ala Ala Met Ser Val Glu Ala Gln Leu Gly Thr Asp Gln Val Phe
 225 230 235 240

Arg Ala Glu Leu His Glu Pro Leu Arg Pro His Pro Gly Gln Gly Arg
 245 250 255

Ser Ala Gln Asn Met Phe Ala Phe Leu Ala Asp Ser Pro Ile Val Ala
 260 265 270

Ser His Arg Glu Gly Asp Gly Arg Val Gln Asp Ala Tyr Ser Leu Arg
 275 280 285

Cys Ser Pro Gln Val Thr Gly Ala Ala Arg Asp Thr Ile Ala His Ala
 290 295 300

Arg Leu Val Ala Thr Arg Glu Leu Ala Ala Ile Asp Asn Pro Val
 305 310 315 320

Val Leu Pro Ser Gly Glu Val Thr Ser Asn Gly Asn Phe His Gly Ala
 325 330 335

Pro Val Ala Tyr Val Leu Asp Phe Leu Ala Ile Ala Val Ala Asp Leu
 340 345 350

Gly Ser Ile Ala Glu Arg Arg Thr Asp Arg Met Leu Asp Pro Ala Arg
 355 360 365

Ser Arg Asp Leu Pro Ala Phe Leu Ala Asp Asp Pro Gly Val Asp Ser
 370 375 380

Gly Met Met Ile Ala Gln Tyr Thr Gln Ala Gly Leu Val Ala Glu Asn
 385 390 395 400

Lys Arg Leu Ala Val Pro Ala Val Asp Ser Ile Pro Ser Ser Ala Met
 405 410 415

Gln Glu Asp His Val Ser Leu Gly Trp His Ala Ala Arg Lys Leu Pro
 420 425 430

Thr Ser Val Ala Asn Leu Arg Arg Ile Leu Ala Val Glu Met Leu Ile
 435 440 445

Ala Gly Arg Ala Leu Asp Leu Arg Ala Pro Leu Lys Pro Gly Pro Ala
 450 455 460

Thr Gly Ala Val Leu Glu Val Leu Arg Ser Lys Val Ala Gly Pro Gly
 465 470 475 480

Gln Asp Arg Phe Leu Ser Ala Glu Leu Glu Ala Ala Tyr Asp Leu Leu
 485 490 495

Ala Asn Gly Ser Val His Lys Ala Leu Glu Ala His Leu Pro Glu
 500 505 510

<210> 43

<211> 513

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: 983831/HAL

<400> 43

Met Ala Ser Ala Pro Gln Ile Thr Leu Gly Leu Ser Gly Ala Thr Ala
 1 5 10 15

Asp Asp Val Ile Ala Val Ala Arg His Glu Ala Arg Ile Ser Ile Ser
 20 25 30

Pro Gln Val Leu Glu Glu Leu Ala Ser Val Arg Ala His Ile Asp Ala
 35 40 45

Leu Ala Ser Ala Asp Thr Pro Val Tyr Gly Ile Ser Thr Gly Phe Gly
 50 55 60

Ala Leu Ala Thr Arg His Ile Ala Pro Glu Asp Arg Ala Lys Leu Gln
 65 70 75 80

Arg Ser Leu Ile Arg Ser His Ala Ala Gly Met Gly Glu Pro Val Glu
 85 90 95

Arg Glu Val Val Arg Ala Leu Met Phe Leu Arg Ala Lys Thr Leu Ala
 100 105 110
 Ser Gly Arg Thr Gly Val Arg Pro Val Val Leu Glu Thr Met Val Gly
 115 120 125
 Met Leu Asn Ala Gly Ile Thr Pro Val Val Arg Glu Tyr Gly Ser Leu
 130 135 140
 Gly Cys Ser Gly Asp Leu Ala Pro Leu Ser His Cys Ala Leu Val Leu
 145 150 155 160
 Met Gly Glu Gly Glu Ala Thr Asp Ala His Gly Asp Ile Arg Pro Val
 165 170 175
 Pro Glu Leu Phe Ala Glu Ala Gly Leu Thr Pro Val Glu Leu Ala Glu
 180 185 190
 Lys Glu Gly Leu Ala Leu Val Asn Gly Thr Asp Gly Met Leu Gly Gln
 195 200 205
 Leu Ile Met Ala Leu Ala Asp Leu Asp Glu Leu Leu Asp Ile Ala Asp
 210 215 220
 Ala Thr Ala Ala Met Ser Val Glu Ala Gln Leu Gly Thr Asp Gln Val
 225 230 235 240
 Phe Arg Ala Glu Leu His Glu Pro Leu Arg Pro His Pro Gly Gln Gly
 245 250 255
 Arg Ser Ala Gln Asn Met Phe Ala Phe Leu Ala Asp Ser Pro Ile Val
 260 265 270
 Ala Ser His Arg Glu Gly Asp Gly Arg Val Gln Asp Ala Tyr Ser Leu
 275 280 285
 Arg Cys Ser Pro Gln Val Thr Gly Ala Ala Arg Asp Thr Ile Ala His
 290 295 300
 Ala Arg Leu Val Ala Thr Arg Glu Leu Ala Ala Ala Ile Asp Asn Pro
 305 310 315 320
 Val Val Leu Pro Ser Gly Glu Val Thr Ser Asn Gly Asn Phe His Gly
 325 330 335
 Ala Pro Val Ala Tyr Val Leu Asp Phe Leu Ala Ile Ala Val Ala Asp
 340 345 350
 Leu Gly Ser Ile Ala Glu Arg Arg Thr Asp Arg Met Leu Asp Pro Ala
 355 360 365
 Arg Ser Arg Asp Leu Pro Ala Phe Leu Ala Asp Asp Pro Gly Val Asp
 370 375 380
 Ser Gly Met Met Ile Ala Gln Tyr Thr Gln Ala Gly Leu Val Ala Glu
 385 390 395 400

Asn Lys Arg Leu Ala Val Pro Ala Ser Val Asp Ser Ile Pro Ser Ser
 405 410 415

 Ala Met Gln Glu Asp His Val Ser Leu Gly Trp His Ala Ala Arg Lys
 420 425 430

 Leu Arg Thr Ser Val Ala Asn Leu Arg Arg Ile Leu Ala Val Glu Met
 435 440 445

 Leu Ile Ala Gly Arg Ala Leu Asp Leu Arg Ala Pro Leu Lys Pro Gly
 450 455 460

 Pro Ala Thr Gly Ala Val Leu Glu Val Leu Arg Ser Lys Val Ala Gly
 465 470 475 480

 Pro Gly Gln Asp Arg Phe Leu Ser Ala Glu Leu Glu Ala Ala Tyr Asp
 485 490 495

 Leu Leu Ala Asn Gly Ser Val His Lys Ala Leu Glu Ala His Leu Pro
 500 505 510

Ala

<210> 44
 <211> 513
 <212> PRT
 <213> Streptomyces coelicolor

<400> 44
 Met Ala Ser Met His Thr Val Val Gly Thr Ser Gly Val Thr Ala
 1 5 10 15

 Ser Asp Val Leu Ala Val Ala Arg Ala Gly Ala Arg Ile Glu Leu Ser
 20 25 30

 Glu Glu Ala Val Ala Ala Leu Ala Ala Ala Arg Ser Val Val Asp Ala
 35 40 45

 Leu Ala Ala Lys Pro Asp Pro Val Tyr Gly Val Ser Thr Gly Phe Gly
 50 55 60

 Ala Leu Ala Thr Arg His Ile Ser Pro Glu Leu Arg Gly Arg Leu Gln
 65 70 75 80

 Arg Asn Ile Val Arg Ser His Ala Ala Gly Met Gly Pro Arg Val Glu
 85 90 95

 Arg Glu Val Val Arg Ala Leu Met Phe Leu Arg Leu Lys Thr Val Cys
 100 105 110

 Ser Gly Arg Thr Gly Val Arg Pro Glu Val Ala Gln Thr Met Ala Asp
 115 120 125

 Val Leu Asn Ala Gly Ile Thr Pro Val Val His Glu Tyr Gly Ser Leu
 130 135 140

Gly Cys Ser Gly Asp Leu Ala Pro Leu Ser His Cys Ala Leu Thr Leu
 145 150 155 160
 Met Gly Glu Gly Asp Ala Glu Gly Pro Asp Gly Thr Val Arg Pro Ala
 165 170 175
 Gly Glu Leu Leu Ala Ala His Gly Ile Ala Pro Val Glu Leu Arg Glu
 180 185 190
 Lys Glu Gly Leu Ala Leu Leu Asn Gly Thr Asp Gly Met Leu Gly Met
 195 200 205
 Leu Val Met Ala Leu Ala Asp Leu Asp Thr Leu Tyr Lys Ser Ala Asp
 210 215 220
 Ile Thr Ala Ala Leu Thr Met Glu Ala Leu Leu Gly Thr Asp Arg Val
 225 230 235 240
 Leu Ala Pro Glu Leu His Ala Pro Ile Arg Pro His Pro Gly Gln Ala
 245 250 255
 Ala Ser Ala Ala Asn Met Ala Ala Val Leu Lys Gly Ser Gly Leu Thr
 260 265 270
 Gly His His Gln Asp Asp Ala Pro Arg Val Gln Asp Ala Tyr Ser Val
 275 280 285
 Arg Cys Ala Pro Gln Val Ala Gly Ala Gly Arg Asp Thr Met Ala His
 290 295 300
 Ala Gly Leu Val Ala Glu Arg Glu Leu Ala Ala Ala Val Asp Asn Pro
 305 310 315 320
 Val Val Leu Pro Asp Gly Arg Val Glu Ser Asn Gly Asn Phe His Gly
 325 330 335
 Ala Pro Val Ala Tyr Val Leu Asp Phe Leu Ala Val Ala Val Ala Asp
 340 345 350
 Leu Gly Ser Ile Ala Glu Arg Arg Thr Asp Arg Leu Leu Asp Lys Asn
 355 360 365
 Arg Ser His Gly Leu Pro Pro Phe Leu Ala Asp Asp Ala Gly Val Asp
 370 375 380
 Ser Gly Leu Met Ile Ala Gln Tyr Thr Gln Ala Ala Leu Val Gly Glu
 385 390 395 400
 Leu Lys Arg Leu Ala Val Pro Ala Ser Ala Asp Ser Ile Pro Ser Ser
 405 410 415
 Ala Met Gln Glu Asp His Val Ser Met Gly Trp Ser Ala Ala Arg Lys
 420 425 430
 Leu Arg Thr Ala Val Asp Asn Leu Ala Arg Val Ile Ala Val Glu Leu
 435 440 445

Tyr Ala Ala Thr Arg Ala Ile Gln Leu Arg Glu Gly Leu Thr Pro Ala
 450 455 460

Pro Ala Ser Gln Ala Val Val Glu Ala Val Arg Ala Ala Val Glu Gly
 465 470 475 480

Pro Gly Pro Asp Arg His Leu Ala Pro Asp Leu Ala Ala Asp Ala
 485 490 495

Phe Val Arg Ala Gly His Leu Val Ala Ala Ala Glu Ser Val Thr Gly
 500 505 510

Pro

<210> 45

<211> 513

<212> PRT

<213> Streptomyces griseus

<400> 45

Met Met Asp Met His Thr Val Val Val Gly Thr Ser Gly Thr Thr Ala
 1 5 10 15

Glu Asp Val Val Ala Val Ala Arg His Gly Ala Arg Val Glu Leu Ser
 20 25 30

Ala Ala Ala Val Glu Ala Leu Ala Ala Ala Arg Leu Ile Val Asp Ala
 35 40 45

Leu Ala Ala Lys Pro Glu Pro Val Tyr Gly Val Ser Thr Gly Phe Gly
 50 55 60

Ala Leu Ala Ser Arg His Ile Gly Thr Glu Leu Arg Ala Gln Leu Gln
 65 70 75 80

Arg Asn Ile Val Arg Ser His Ala Ala Gly Met Gly Pro Arg Val Glu
 85 90 95

Arg Glu Val Val Arg Ala Leu Met Phe Leu Arg Leu Lys Thr Val Ala
 100 105 110

Ser Gly His Thr Gly Val Arg Pro Glu Val Ala Gln Thr Met Ala Asp
 115 120 125

Val Leu Asn Ala Gly Ile Thr Pro Val Val His Glu Tyr Gly Ser Leu
 130 135 140

Gly Cys Ser Gly Asp Leu Ala Pro Leu Ser His Cys Ala Leu Thr Leu
 145 150 155 160

Met Gly Glu Gly Glu Ala Glu Gly Pro Asp Gly Thr Val Arg Pro Ala
 165 170 175

Gly Glu Leu Leu Ala Ala His Gly Ile Ala Pro Val Glu Leu Arg Glu
 180 185 190

Lys Glu Gly Leu Ala Leu Leu Asn Gly Thr Asp Gly Met Leu Gly Met
 195 200 205

Leu Val Met Ala Leu Ala Asp Leu Arg Asn Leu Tyr Thr Ser Ala Asp
 210 215 220

Ile Thr Ala Ala Leu Ser Leu Glu Ala Leu Leu Gly Thr Asp Lys Val
 225 230 235 240

Leu Ala Pro Glu Leu His Ala Pro Ile Arg Pro His Pro Gly Gln Gly
 245 250 255

Val Ser Ala Asp Asn Met Ser Arg Val Leu Ala Gly Ser Gly Leu Thr
 260 265 270

Gly His His Gln Asp Asp Ala Pro Arg Val Gln Asp Ala Tyr Ser Val
 275 280 285

Arg Cys Ala Pro Gln Val Asn Gly Ala Gly Arg Asp Thr Leu Asp His
 290 295 300

Ala Ala Leu Val Ala Gly Arg Glu Leu Ala Ser Ser Val Asp Asn Pro
 305 310 315 320

Val Val Leu Pro Asp Gly Arg Val Glu Ser Asn Gly Asn Phe His Gly
 325 330 335

Ala Pro Val Ala Tyr Val Leu Asp Phe Leu Ala Ile Val Ala Ala Asp
 340 345 350

Leu Gly Ser Ile Cys Glu Arg Arg Thr Asp Arg Leu Leu Asp Lys Asn
 355 360 365

Arg Ser His Gly Leu Pro Pro Phe Leu Ala Asp Asp Ala Gly Val Asp
 370 375 380

Ser Gly Leu Met Ile Ala Gln Tyr Thr Gln Ala Ala Leu Val Ser Glu
 385 390 395 400

Met Lys Arg Leu Ala Val Pro Ala Ser Ala Asp Ser Ile Pro Ser Ser
 405 410 415

Ala Met Gln Glu Asp His Val Ser Met Gly Trp Ser Ala Ala Arg Lys
 420 425 430

Leu Arg Thr Ala Val Asp Asn Leu Ala Arg Ile Val Ala Val Glu Leu
 435 440 445

Tyr Ala Ala Thr Arg Ala Ile Glu Leu Arg Ala Ala Leu Thr Pro Ala
 450 455 460

Pro Ala Ser Glu Ala Val Val Ala Ala Leu Arg Ala Ala Gly Ala Gly
 465 470 475 480

Pro Gly Pro Asp Arg Phe Leu Ala Pro Asp Leu Ala Ala Asp Thr
 485 490 495

Phe Val Arg Glu Gly Arg Leu Val Ala Ala Val Glu Pro Val Thr Gly
 500 505 510

Pro

<210> 46
 <211> 513
 <212> PRT
 <213> Deinococcus radiodurans

<400> 46
 Met Ala Ser Ala Pro Gln Ile Met Ile Leu Asp Arg Asp Leu Asn Leu
 1 5 10 15

Glu Gln Phe Ile Ser Val Val Arg His Gly Glu Gln Val Glu Leu Ser
 20 25 30

Ala Ala Ala Arg Glu Arg Ile Ala Arg Ala Arg Thr Val Ile Glu Gln
 35 40 45

Ile Val Glu Gly Asp Thr Pro Ile Tyr Gly Val Asn Thr Gly Phe Gly
 50 55 60

Lys Phe Glu Asn Val Gln Ile Asp Arg Ser Gln Leu Ala Gln Leu Gln
 65 70 75 80

His Asn Leu Ile Val Ser His Ala Ile Gly Met Gly Glu Pro Leu Pro
 85 90 95

Ala Glu Val Val Arg Gly Met Leu Leu Leu Arg Ala Gln Ser Leu Ser
 100 105 110

Leu Gly His Ser Gly Val Arg Val Glu Val Val Glu Leu Leu Leu Ala
 115 120 125

Leu Leu Asn Ala Asp Ala Leu Pro Val Val Pro Ser Gln Gly Ser Val
 130 135 140

Gly Ala Ser Gly Asp Leu Ala Pro Leu Ala His Leu Ala Leu Gly Leu
 145 150 155 160

Ile Gly Leu Gly Asp Ile Thr Glu Tyr Gln Gly Gln Val Arg Pro Ala
 165 170 175

Ala Asp Val Leu Ala Glu Leu Gly Leu Ser Pro Val Gln Leu Gln Ala
 180 185 190

Lys Glu Gly Leu Ala Leu Ile Asn Gly Thr Gln Leu Met Gly Ser Leu
 195 200 205

Leu Ala Leu Ala Leu His Asp Ala Gln Val Leu Leu Gly Thr Ala Asn
 210 215 220

Leu Ala Ala Ala Met Thr Val Glu Ala Arg Tyr Gly Ser His Arg Pro
 225 230 235 240

Phe Gln Pro Asp Val His Val Gly Leu Arg Pro His Pro Gly Ala Leu
 245 250 255

 Ala Val Ala Ala Glu Leu Arg Glu Phe Leu Ala Gly Ser Glu Ile Ala
 260 265 270

 Pro Ser His Leu Thr Gly Asp Gly Lys Val Gln Asp Ala Tyr Ser Leu
 275 280 285

 Arg Ala Val Pro Gln Val His Gly Ala Thr Trp Asp Ala Leu Ala Gln
 290 295 300

 Ala Glu Arg Val Leu Ala Val Glu Phe Ala Ser Val Thr Asp Asn Pro
 305 310 315 320

 Leu Ile Phe Pro Thr Gly Glu Val Val Ser Gly Gly Asn Phe His Gly
 325 330 335

 Gln Pro Leu Ala Val Thr Ile Asp Ala Leu Lys Val Ala Val Ala Glu
 340 345 350

 Leu Gly Ser Ile Ser Glu Arg Arg Thr Glu Gln Leu Leu Asn Pro Ala
 355 360 365

 Leu Ser Arg Gly Leu Pro Ala Phe Leu Thr Pro Asn Gly Gly Leu Asn
 370 375 380

 Ser Gly Phe Met Ile Ala Gln Tyr Thr Ser Ala Ala Leu Val Ser Glu
 385 390 395 400

 Asn Lys Val Leu Ser His Pro Ala Ser Val Asp Ser Ile Pro Thr Ser
 405 410 415

 Ala Asn Gln Glu Asp His Val Ser Met Gly Ala His Ala Ala Arg Gln
 420 425 430

 Leu Arg Gln Ile Val Ala Asn Val Gln Thr Val Leu Ser Ile Glu Leu
 435 440 445

 Leu Cys Ala Ala Gln Gly Leu Asp Phe Gln Gln Pro Leu Arg Ala Gly
 450 455 460

 Arg Gly Val Gln Ala Ala Tyr Glu Tyr Val Arg Thr Phe Val Pro Thr
 465 470 475 480

 Leu Thr Glu Asp Arg Tyr Phe Arg Pro Asp Leu Leu Arg Leu Arg Gly
 485 490 495

 Glu Leu Val Ser Gly Arg Val Ala Gln Ala Ala Asp Thr Gln Ala Pro
 500 505 510

 Ala

<210> 47
 <211> 513
 <212> PRT

<213> Agrobacterium rhizogenes

<400>	47			
Met Ala Ser Ala Pro Gln Ile Thr Leu Gly Leu Ser Gly Val Pro Leu				
1	5	10	15	
His His Leu Ala Asp Ile Tyr Trp Asn Asn Gly Ser Ala Lys Leu Asp				
20	25	30		
Pro Ser Phe Asp Ala Ala Val Leu Lys Gly Ala Ala Arg Ile Ala Glu				
35	40	45		
Ile Ala Ala Gly Asn Ala Pro Val Tyr Gly Ile Asn Thr Gly Phe Gly				
50	55	60		
Lys Leu Ala Ser Ile Lys Ile Asp Ala Ala Asp Leu Ala Thr Leu Gln				
65	70	75	80	
Arg Asn Leu Ile Leu Ser His Cys Cys Gly Val Gly Ala Pro Leu Pro				
85	90	95		
Glu Asn Val Val Arg Leu Ile Met Ala Leu Lys Leu Ile Ser Leu Gly				
100	105	110		
Arg Gly Ala Ser Gly Val Arg Ile Glu Leu Ile Arg Leu Ile Glu Gly				
115	120	125		
Met Leu Glu Lys Gly Val Ile Pro Val Ile Pro Glu Lys Gly Ser Val				
130	135	140		
Gly Ala Ser Gly Asp Leu Ala Pro Leu Ala His Met Ser Ala Thr Met				
145	150	155	160	
Met Gly Glu Gly Glu Ala Phe Asp Tyr Gln Gly Val Gln Met Pro Ser				
165	170	175		
Lys Asp Ala Leu Ala Lys Ala Gly Leu Ser Pro Val Val Leu Ala Ala				
180	185	190		
Lys Glu Gly Leu Ala Leu Ile Asn Gly Thr Gln Thr Ser Thr Ala Leu				
195	200	205		
Ala Leu Ala Gly Leu Phe Arg Ala His Arg Ala Ala Gln Ser Ala Leu				
210	215	220		
Val Thr Gly Ala Leu Ser Thr Asp Ala Ala Met Gly Ser Ser Ala Pro				
225	230	235	240	
Phe His Pro Asp Ile His Thr Pro Leu Arg Gly His Lys Gly Gln Ile				
245	250	255		
Asp Ala Gly Ser Ala Leu Arg Asn Leu Leu Gln Gly Ser Glu Ile Arg				
260	265	270		
Glu Ser His Ile Glu Gly Asp Glu Arg Val Gln Asp Pro Tyr Cys Ile				
275	280	285		

Arg Cys Gln Pro Gln Val Asp Gly Ala Cys Leu Asp Leu Leu Ala Ser
 290 295 300
 Val Ala Arg Thr Leu Glu Ile Glu Ala Asn Ala Val Thr Asp Asn Pro
 305 310 315 320
 Leu Val Leu Ser Asp Asn Ser Val Val Ser Gly Gly Asn Phe His Ala
 325 330 335
 Glu Pro Val Ala Phe Ala Ala Asp Gln Thr Ala Leu Ala Val Cys Glu
 340 345 350
 Ile Gly Ala Ile Ala Gln Arg Arg Ile Ala Leu Leu Val Asp Pro Ala
 355 360 365
 Leu Ser Tyr Gly Leu Pro Ala Phe Leu Ser Lys Lys Pro Gly Leu Asn
 370 375 380
 Ser Gly Leu Met Ile Ala Glu Val Thr Ser Ala Ala Leu Met Ser Glu
 385 390 395 400
 Asn Lys Gln Met Ser His Pro Ala Ser Val Asp Ser Thr Pro Thr Ser
 405 410 415
 Ala Asn Gln Glu Asp His Val Ser Met Ala Cys His Gly Ala Arg Arg
 420 425 430
 Leu Leu Ala Met Thr Asp Asn Leu Phe Gly Ile Leu Gly Ile Glu Ala
 435 440 445
 Leu Ala Ala Val Gln Gly Val Glu Leu Arg Gly Pro Leu Lys Thr Ser
 450 455 460
 Pro Glu Leu Glu Lys Ala Ala Ala Val Leu Arg Ser Ala Val Pro Val
 465 470 475 480
 Leu Glu Asp Asp Arg Tyr Met Ala Thr Asp Leu Lys Ala Ala Ile Glu
 485 490 495
 Val Val Ala Ser Gly Ala Leu Val Ser Ala Ile Ser Ser Gly Leu Pro
 500 505 510
 Val

<210> 48
 <211> 513
 <212> PRT
 <213> Agrobacterium rhizogenes

<400> 48
 Met Ala Ser Ala Pro Gln Ile Thr Leu Gly Leu Ser Gly Val Pro Leu
 1 5 10 15
 His His Leu Ala Asp Ile Tyr Trp Asn Asn Gly Ser Ala Lys Leu Asp
 20 25 30

Pro Ser Phe Asp Ala Ala Val Leu Lys Gly Ala Ala Arg Ile Ala Glu
 35 40 45

 Ile Ala Ala Gly Asn Ala Pro Val Tyr Gly Ile Asn Thr Gly Phe Gly
 50 55 60

 Lys Leu Ala Ser Ile Lys Ile Asp Ala Ala Asp Leu Ala Thr Leu Gln
 65 70 75 80

 Arg Asn Leu Ile Leu Ser His Cys Cys Gly Val Gly Ala Pro Leu Pro
 85 90 95

 Glu Asn Val Val Arg Leu Ile Met Ala Leu Lys Leu Ile Ser Leu Gly
 100 105 110

 Arg Gly Ala Ser Gly Val Arg Ile Glu Leu Ile Arg Leu Ile Glu Gly
 115 120 125

 Met Leu Glu Lys Gly Val Ile Pro Val Ile Pro Glu Lys Gly Ser Val
 130 135 140

 Gly Ala Ser Gly Asp Leu Ala Pro Leu Ala His Met Ser Ala Thr Met
 145 150 155 160

 Met Gly Glu Gly Glu Ala Phe Asp Tyr Gln Gly Val Gln Met Pro Ser
 165 170 175

 Lys Asp Ala Leu Ala Lys Ala Gly Leu Ser Pro Val Val Leu Ala Ala
 180 185 190

 Lys Glu Gly Leu Ala Leu Ile Asn Gly Thr Gln Thr Ser Thr Ala Leu
 195 200 205

 Ala Leu Ala Gly Leu Phe Arg Ala His Arg Ala Ala Gln Ser Ala Leu
 210 215 220

 Val Thr Gly Ala Leu Ser Thr Asp Ala Ala Met Gly Ser Ser Ala Pro
 225 230 235 240

 Phe His Pro Asp Ile His Thr Pro Leu Arg Gly His Lys Gly Gln Ile
 245 250 255

 Asp Ala Gly Ser Ala Leu Arg Asn Leu Leu Gln Gly Ser Glu Ile Arg
 260 265 270

 Glu Ser His Ile Glu Gly Asp Glu Arg Val Gln Asp Pro Tyr Cys Ile
 275 280 285

 Arg Cys Gln Pro Gln Val Asp Gly Ala Cys Leu Asp Leu Leu Ala Ser
 290 295 300

 Val Ala Arg Thr Leu Glu Ala Asn Ala Val Thr Asp Asn Pro
 305 310 315 320

 Leu Val Leu Ser Asp Asn Ser Val Val Ser Gly Gly Asn Phe His Ala
 325 330 335

Glu Pro Val Ala Phe Ala Ala Asp Gln Thr Ala Leu Ala Val Cys Glu
 340 345 350

 Ile Gly Ala Ile Ala Gln Arg Arg Ile Ala Leu Leu Val Asp Pro Ala
 355 360 365

 Leu Ser Tyr Gly Leu Pro Ala Phe Leu Ser Lys Lys Pro Gly Leu Asn
 370 375 380

 Ser Gly Leu Met Ile Ala Glu Val Thr Ser Ala Ala Leu Met Ser Glu
 385 390 395 400

 Asn Lys Gln Met Ser His Pro Ala Ser Val Asp Ser Thr Pro Thr Ser
 405 410 415

 Ala Asn Gln Glu Asp His Val Ser Met Ala Cys His Gly Ala Arg Arg
 420 425 430

 Leu Leu Ala Met Thr Asp Asn Leu Phe Gly Ile Leu Gly Ile Glu Ala
 435 440 445

 Leu Ala Ala Val Gln Gly Val Glu Leu Arg Gly Pro Leu Lys Thr Ser
 450 455 460

 Pro Glu Leu Glu Lys Ala Ala Ala Val Leu Arg Ser Ala Val Pro Val
 465 470 475 480

 Leu Glu Asp Asp Arg Tyr Met Ala Thr Asp Leu Lys Ala Ala Ile Glu
 485 490 495

 Val Val Ala Ser Gly Ala Leu Val Ser Ala Ile Ser Ser Gly Leu Pro
 500 505 510

 Val

<210> 49
 <211> 513
 <212> PRT
 <213> Bacillus subtilis

<400> 49
 Met Ala Ser Ala Pro Met Val Thr Leu Asp Gly Ser Ser Leu Thr Thr
 1 5 10 15

 Ala Asp Val Ala Arg Val Leu Phe Asp Phe Glu Glu Ala Ala Ala Ser
 20 25 30

 Glu Glu Ser Met Glu Arg Val Lys Lys Ser Arg Ala Ala Val Glu Arg
 35 40 45

 Ile Val Arg Asp Glu Lys Thr Ile Tyr Gly Ile Asn Thr Gly Phe Gly
 50 55 60

 Lys Phe Ser Asp Val Leu Ile Gln Lys Glu Asp Ser Ala Ala Leu Gln
 65 70 75 80

Leu Asn Leu Ile Leu Ser His Ala Cys Gly Val Gly Asp Pro Phe Pro
 85 90 95

 Glu Cys Val Ser Arg Ala Met Leu Leu Leu Arg Ala Asn Ala Leu Leu
 100 105 110

 Lys Gly Phe Ser Gly Val Arg Ala Glu Leu Ile Glu Gln Leu Leu Ala
 115 120 125

 Phe Leu Asn Lys Arg Val His Pro Val Ile Pro Gln Gln Gly Ser Leu
 130 135 140

 Gly Ala Ser Gly Asp Leu Ala Pro Leu Ser His Leu Ala Leu Ala Leu
 145 150 155 160

 Ile Gly Gln Gly Glu Val Phe Asp Phe Glu Gly Glu Arg Met Pro Ala
 165 170 175

 Met Thr Gly Leu Lys Lys Ala Gly Ile Gln Pro Val Thr Leu Thr Ser
 180 185 190

 Lys Glu Gly Leu Ala Leu Ile Asn Gly Thr Gln Ala Met Thr Ala Met
 195 200 205

 Gly Val Val Ala Tyr Ile Glu Ala Glu Lys Leu Ala Tyr Gln Thr Glu
 210 215 220

 Arg Ile Ala Ser Leu Thr Ile Glu Gly Leu Gln Gly Ile Ile Asp Ala
 225 230 235 240

 Phe Asp Glu Asp Ile His Leu Ala Leu Arg Gly Tyr Gln Glu Gln Ile
 245 250 255

 Asp Val Ala Glu Arg Ile Arg Phe Tyr Leu Ser Asp Ser Gly Leu Thr
 260 265 270

 Thr Ser His Arg Gln Gly Glu Leu Arg Val Gln Asp Ala Tyr Ser Leu
 275 280 285

 Arg Cys Ile Pro Gln Val His Gly Ala Thr Trp Gln Thr Leu Gly Tyr
 290 295 300

 Val Lys Glu Lys Leu Glu Ile Glu Met Asn Ala Ala Thr Asp Asn Pro
 305 310 315 320

 Leu Ile Phe Asn Asp Gly Asp Val Ile Ser Gly Gly Asn Phe His Gly
 325 330 335

 Gln Pro Ile Ala Phe Ala Met Asp Phe Leu Lys Ile Ala Ile Ser Glu
 340 345 350

 Leu Ala Asn Ile Ala Glu Arg Arg Ile Glu Arg Leu Val Asn Pro Gln
 355 360 365

 Leu Asn Arg Asp Leu Pro Pro Phe Leu Ser Pro His Pro Gly Leu Gln
 370 375 380

Ser Gly Ala Met Ile Met Gln Tyr Ala Ala Ala Ser Leu Val Ser Glu
 385 390 395 400
 Asn Lys Thr Leu Ala His Pro Ala Ser Val Asp Ser Ile Pro Ser Ser
 405 410 415
 Ala Asn Gln Glu Asp His Val Ser Met Gly Thr Ile Ala Ala Arg His
 420 425 430
 Ala Tyr Gln Val Ile Ala Asn Thr Arg Arg Val Ile Ala Ile Glu Ala
 435 440 445
 Ile Cys Ala Leu Gln Ala Val Glu Tyr Arg Gly Ile Glu His Ala Ala
 450 455 460
 Ser Tyr Thr Lys Gln Leu Phe Gln Glu Met Arg Lys Val Val Pro Ser
 465 470 475 480
 Ile Gln Gln Asp Arg Val Phe Ser Tyr Asp Ile Glu Arg Leu Thr Asp
 485 490 495
 Trp Leu Lys Lys Glu Ser Leu Ile Pro Asp His Gln Asn Lys Glu Leu
 500 505 510
 Arg

<210> 50
 <211> 513
 <212> PRT
 <213> Vibrio cholerae

<400> 50
 Met Ala Ser Met Leu His Leu Met Ile Lys Pro Gly Gln Leu Ser Leu
 1 5 10 15

Lys Gln Leu Arg Gln Val Ser Arg Ser Pro Val Val Leu Ser Leu Asp
 20 25 30

Pro Glu Ala Ile Pro Ala Ile Ala Glu Ser Ala Gln Val Val Glu Gln
 35 40 45

Val Ile Ser Glu Gly Arg Thr Val Tyr Gly Ile Asn Thr Gly Phe Gly
 50 55 60

Leu Leu Ala Asn Thr Lys Ile Ala Pro Gln Asp Leu Glu Thr Leu Gln
 65 70 75 80

Lys Ser Ile Val Leu Ser His Ala Ala Gly Ile Gly Glu Leu Met Ser
 85 90 95

Asp Glu Thr Val Arg Leu Met Met Leu Leu Lys Ile Asn Ser Leu Ala
 100 105 110

Arg Gly Tyr Ser Gly Ile Arg Leu Glu Val Ile Gln Ala Leu Ile Glu
 115 120 125

Leu Val Asn Asn Gln Ile Tyr Pro Cys Val Pro Lys Lys Gly Ser Val
 130 135 140
 Gly Ala Ser Gly Asp Leu Ala Pro Leu Ala His Met Ser Thr Val Leu
 145 150 155 160
 Leu Gly Glu Gly Gln Ala Arg Asp Tyr Asn Gly Lys Ile Ile Ser Gly
 165 170 175
 Leu Glu Ala Met Lys Ile Ala Gly Leu Glu Pro Ile Thr Leu Ala Pro
 180 185 190
 Lys Glu Gly Leu Ala Leu Leu Asn Gly Thr Gln Ala Ser Thr Ala Phe
 195 200 205
 Ala Leu Glu Gly Leu Phe Val Ala Glu Asp Leu Phe Ala Ser Ala Thr
 210 215 220
 Val Cys Gly Ala Met Ser Val Glu Ala Ala Leu Gly Ser Arg Arg Pro
 225 230 235 240
 Phe Asp Pro Arg Ile His Arg Pro Val Arg Gly His Arg Thr Gln Met
 245 250 255
 Asp Ala Ala Thr Ala Tyr Arg His Leu Leu Val Ser Ser Glu Ile Gly
 260 265 270
 Gln Ser His Ser Asn Cys Glu Gly Lys Val Gln Asp Pro Tyr Ser Leu
 275 280 285
 Arg Cys Gln Pro Gln Val Met Gly Ala Cys Leu Gln Gln Ile Arg Ser
 290 295 300
 Ala Ala Glu Val Leu Glu Val Glu Ala Asn Ser Val Ser Asp Asn Pro
 305 310 315 320
 Leu Val Phe Ala Asp Gly Asp Ile Ile Ser Gly Gly Asn Phe His Ala
 325 330 335
 Glu Pro Val Ala Met Ala Ala Asp Asn Leu Ala Leu Ala Ile Ala Glu
 340 345 350
 Ile Gly Ser Leu Ser Glu Arg Arg Met Ala Leu Leu Ile Asp Ser Ala
 355 360 365
 Leu Ser Lys Asp Leu Pro Pro Phe Leu Val Asp Asn Gly Gly Val Asn
 370 375 380
 Ser Gly Phe Met Ile Ala Gln Val Thr Ala Ala Ala Leu Ala Ser Glu
 385 390 395 400
 Asn Lys Thr Leu Ala His Pro Ala Ser Val Asp Ser Leu Pro Thr Ser
 405 410 415
 Ala Asn Gln Glu Asp His Val Ser Met Ala Thr Phe Ala Ala Arg Arg
 420 425 430

Leu Arg Asp Met Gly Glu Asn Thr Arg Gly Ile Leu Ala Val Glu Tyr
 435 440 445

Leu Ala Ala Ala Gln Gly Leu Asp Phe Arg Ala Pro Leu Lys Ser Ser
 450 455 460

Pro Arg Ile Glu Glu Ala Arg Gln Ile Leu Arg Glu Lys Val Pro Phe
 465 470 475 480

Tyr Asp Lys Asp Arg Tyr Phe Ala Pro Asp Ile Glu Lys Ala Asn Ala
 485 490 495

Leu Leu Ala Gln Leu Ala Val His Asn Arg Leu Met Pro Asp Gln Leu
 500 505 510

Leu

<210> 51
 <211> 513
 <212> PRT
 <213> Pseudomonas aeruginosa

<400> 51
 Met Ala Ser Ala Met Ser Leu His Leu Lys Pro Gly Gln Leu Thr Leu
 1 5 10 15

Ala Asp Leu Arg Gln Ala Tyr Leu Ala Pro Val Arg Leu Ser Leu Asp
 20 25 30

Pro Ser Ala Asp Ala Pro Ile Ala Ala Ser Val Ala Cys Val Glu Asn
 35 40 45

Ile Ile Ala Glu Gly Arg Thr Ala Tyr Gly Ile Asn Thr Gly Phe Gly
 50 55 60

Leu Leu Ala Ser Thr Arg Ile Ser Pro Ala Asp Leu Glu Lys Leu Gln
 65 70 75 80

Arg Ser Ile Val Leu Ser His Ala Ala Gly Val Gly Glu Ala Leu Asp
 85 90 95

Asp Ala Met Val Arg Leu Val Met Leu Leu Lys Val Asn Ser Leu Ala
 100 105 110

Arg Gly Phe Ser Gly Ile Arg Arg Lys Val Ile Asp Ala Leu Ile Ala
 115 120 125

Leu Ile Asn Ala Glu Val Tyr Pro His Ile Pro Leu Lys Gly Ser Val
 130 135 140

Gly Ala Ser Gly Asp Leu Ala Pro Leu Ala His Met Ser Leu Val Leu
 145 150 155 160

Ile Gly Glu Ser Arg Ala Arg His Ala Arg Gly Glu Trp Leu Pro Ala
 165 170 175

Ala Glu Ala Leu Ala Val Ala Gly Leu Glu Pro Leu Thr Leu Ala Ala
 180 185 190

Lys Glu Gly Leu Ala Leu Leu Asn Gly Thr Gln Val Ser Thr Ala Tyr
 195 200 205

Ala Leu Arg Gly Leu Phe Glu Ala Glu Asp Leu Phe Ala Ala Ala Thr
 210 215 220

Val Cys Gly Gly Leu Ser Val Glu Ala Met Leu Gly Ser Arg Ala Pro
 225 230 235 240

Phe Asp Ala Arg Ile His Ala Ala Leu Arg Gly Gln Arg Gly Gln Ile
 245 250 255

Asp Val Ala Ala Ala Tyr Arg Asp Leu Leu Ala Ser Ser Glu Val Ala
 260 265 270

Arg Ser His Glu Lys Cys Asp Gly Lys Val Gln Asp Pro Tyr Ser Leu
 275 280 285

Arg Cys Gln Pro Gln Val Met Gly Ala Cys Leu Thr Gln Met Arg Gln
 290 295 300

Ala Ala Glu Val Leu Glu Ile Glu Ala Asn Ala Val Ser Asp Asn Pro
 305 310 315 320

Leu Val Phe Ala Ala Gly Asp Val Ile Ser Gly Gly Asn Phe His Ala
 325 330 335

Glu Pro Val Ala Met Ala Ala Asp Asn Leu Ala Leu Ala Leu Ala Glu
 340 345 350

Ile Gly Ser Leu Ser Glu Arg Arg Ile Ser Leu Met Met Asp Met His
 355 360 365

Met Ser Gln Asp Leu Pro Pro Phe Leu Val Ala Asn Gly Gly Val Asn
 370 375 380

Ser Gly Phe Met Ile Ala Gln Val Thr Ala Ala Leu Ala Ser Asp
 385 390 395 400

Asn Lys Ala Leu Ala His Pro Ala Ser Val Asp Ser Leu Pro Thr Ser
 405 410 415

Ala Asn Gln Glu Asp His Val Ser Met Ala Pro Asn Ala Gly Lys Arg
 420 425 430

Leu Trp Ala Met Ala Glu Asn Val Arg Gly Ile Leu Ala Val Glu Trp
 435 440 445

Leu Gly Ala Cys Gln Gly Leu Asp Phe Arg Glu Gly Leu Lys Ser Ser
 450 455 460

Pro Lys Leu Glu Gln Ala Arg Arg Leu Leu Arg Asp Lys Val Pro Tyr
 465 470 475 480

Tyr Gln Glu Asp Arg Phe Phe Ala Pro Asp Ile Glu Ala Ala Ser Gln
 485 490 495

Leu Leu Ala Ser Gly Cys Leu Asn Ala Leu Leu Pro Ala Arg Leu Leu
 500 505 510

Pro

<210> 52
 <211> 513
 <212> PRT
 <213> Bacillus halodurans

<400> 52
 Met Ala Met Thr Asn Leu Lys Leu Leu Asp Gly Arg Ser Leu Ser Leu
 1 5 10 15

His Asp Leu His Arg Ile Ile Tyr Glu Gly Glu Thr Val Gly Ala Ser
 20 25 30

Asp Glu Ser Met Glu Lys Val Lys Gln Ser Arg Lys Ala Val Glu Gln
 35 40 45

Ile Val Ala Asp Glu Lys Ile Ile Tyr Gly Ile Thr Thr Gly Phe Gly
 50 55 60

Lys Phe Ser Asp Ile Phe Ile Asp Pro Asp Asp Val Glu Asn Leu Gln
 65 70 75 80

His Asn Leu Ile Tyr Ser His Ala Cys Gly Val Gly Ser Pro Phe Pro
 85 90 95

Glu Thr Val Ser Arg Thr Met Leu Val Leu Arg Ala Asn Ala Leu Leu
 100 105 110

Lys Gly Phe Ser Gly Val Arg Pro Leu Val Ile Glu Arg Leu Leu Ala
 115 120 125

Leu Val Asn Ala Asn Ile His Pro Val Ile Pro Gln Gln Gly Ser Leu
 130 135 140

Gly Ala Ser Gly Asp Leu Ala Pro Leu Ser His Leu Ala Leu Val Leu
 145 150 155 160

Leu Gly Glu Gly Glu Val Phe Asp Tyr Lys Gly Thr Lys Thr Lys Ala
 165 170 175

Ser Phe Ala Leu Lys Glu Glu Ile Glu Pro Ile Thr Leu Thr Ala
 180 185 190

Lys Glu Gly Leu Ala Leu Ile Asn Gly Thr Gln Ala Met Thr Ala Met
 195 200 205

Gly Val Ile Ala Tyr Leu Glu Ala Glu Lys Leu Ala Phe Gln Ser Glu
 210 215 220

Ile Ile Ala Ser Leu Thr Met Glu Gly Leu Arg Gly Ile Ile Asp Ala
 225 230 235 240
 Phe Asp Glu Gln Ile His Phe Ala Leu Arg Gly Tyr Val Glu Gln Val
 245 250 255
 Asp Val Ala Arg Arg Met Glu Ser Tyr Leu Gln Asp Ser Gln Leu Thr
 260 265 270
 Thr Ser His Arg Gln Gly Glu Leu Arg Val Gln Asp Ala Tyr Ser Leu
 275 280 285
 Arg Cys Ile Pro Gln Val His Gly Ala Thr Trp Gln Thr Leu Arg Tyr
 290 295 300
 Val Lys Glu Lys Leu Glu Ile Glu Met Asn Ala Ala Thr Asp Asn Pro
 305 310 315 320
 Leu Ile Phe Asp Asn Gly Gln Val Ile Ser Gly Gly Asn Phe His Gly
 325 330 335
 Gln Gln Ile Ala Leu Ala Met Asp Phe Leu Gly Ile Ala Met Ala Glu
 340 345 350
 Leu Ala Asn Ile Ser Glu Arg Arg Ile Glu Arg Leu Val Asn Pro Gln
 355 360 365
 Leu Asn Arg Asp Leu Pro Pro Phe Leu Ser Ala Ala Pro Gly Val Gln
 370 375 380
 Ser Gly Val Met Ile Leu Gln Tyr Cys Ala Ala Ser Leu Val Ser Glu
 385 390 395 400
 Asn Lys Thr Leu Ala His Pro Ala Ser Val Asp Ser Ile Pro Ser Ser
 405 410 415
 Ala Asn Gln Glu Asp His Val Ser Met Gly Thr Ile Gly Ser Arg His
 420 425 430
 Ala Tyr Gln Ile Ile Gln Asn Val Arg Asn Val Leu Ala Ile Glu Leu
 435 440 445
 Ile Cys Ala Met Gln Ala Val Asp Ile Arg Gly Arg Glu Lys Met Ala
 450 455 460
 Ser Phe Thr Lys Lys Ile Leu Glu Lys Gly Arg Glu His Val Pro Tyr
 465 470 475 480
 Ile Asp Gln Asp Arg Met Phe Ala Lys Asp Ile Glu Arg Ala Ala Lys
 485 490 495
 Trp Leu Lys Asp Gly Ser Trp Asp Phe Thr Lys Met Arg Glu Lys Glu
 500 505 510

Arg

<210> 53
<211> 513
<212> PRT
<213> Pseudomonas putida

<400> 53
Met Ala Ser Ala Thr Glu Leu Thr Leu Lys Pro Gly Thr Leu Thr Leu
1 5 10 15
Ala Gln Leu Arg Ala Ile His Ala Ala Pro Val Arg Leu Gln Leu Asp
20 25 30
Ala Ser Ala Ala Pro Ala Ile Asp Ala Ser Val Ala Cys Val Glu Gln
35 40 45
Ile Ile Ala Glu Asp Arg Thr Ala Tyr Gly Ile Asn Thr Gly Phe Gly
50 55 60
Leu Leu Ala Ser Thr Arg Ile Ala Ser His Asp Leu Glu Asn Leu Gln
65 70 75 80
Arg Ser Leu Val Leu Ser His Ala Ala Gly Ile Gly Ala Pro Leu Asp
85 90 95
Asp Asp Leu Val Arg Leu Ile Met Val Leu Lys Ile Asn Ser Leu Ser
100 105 110
Arg Gly Phe Ser Gly Ile Arg Arg Lys Val Ile Asp Ala Leu Ile Ala
115 120 125
Leu Val Asn Ala Glu Val Tyr Pro His Ile Pro Leu Lys Gly Ser Val
130 135 140
Gly Ala Ser Gly Asp Leu Ala Pro Leu Ala His Met Ser Leu Val Leu
145 150 155 160
Leu Gly Glu Gly Lys Ala Arg Asp Tyr Lys Gly Gln Trp Leu Ser Ala
165 170 175
Thr Glu Ala Leu Ala Val Ala Gly Leu Glu Pro Leu Thr Leu Ala Ala
180 185 190
Lys Glu Gly Leu Ala Leu Leu Asn Gly Thr Gln Ala Ser Thr Ala Tyr
195 200 205
Ala Leu Arg Gly Leu Phe Tyr Ala Glu Asp Leu Tyr Ala Ala Ala Ile
210 215 220
Ala Cys Gly Gly Leu Ser Val Glu Ala Val Leu Gly Ser Arg Ser Pro
225 230 235 240
Phe Asp Ala Arg Ile His Glu Ala Leu Arg Gly Gln Arg Gly Gln Ile
245 250 255
Asp Thr Ala Ala Cys Phe Arg Asp Leu Leu Gly Asp Ser Ser Glu Val
260 265 270

Ser Ser His Lys Asn Cys Asp Gly Lys Val Gln Asp Pro Tyr Ser Leu
 275 280 285
 Arg Cys Gln Pro Gln Val Met Gly Ala Cys Leu Thr Gln Leu Arg Gln
 290 295 300
 Ala Ala Glu Val Leu Gly Ile Glu Ala Asn Ala Val Ser Asp Asn Pro
 305 310 315 320
 Leu Val Phe Ala Ala Gly Asp Val Ile Ser Gly Gly Asn Phe His Ala
 325 330 335
 Glu Pro Val Ala Met Ala Ala Asp Asn Leu Ala Leu Ala Ile Ala Glu
 340 345 350
 Ile Gly Ser Leu Ser Glu Arg Arg Ile Ser Leu Met Met Asp Lys His
 355 360 365
 Met Ser Gln Asp Leu Pro Pro Phe Leu Val Glu Asn Gly Gly Val Asn
 370 375 380
 Ser Gly Phe Met Ile Ala Gln Val Thr Ala Ala Leu Ala Ser Glu
 385 390 395 400
 Asn Lys Ala Leu Ser His Pro His Ser Val Asp Ser Leu Pro Thr Ser
 405 410 415
 Ala Asn Gln Glu Asp His Val Ser Met Ala Pro Ala Ala Gly Lys Arg
 420 425 430
 Leu Trp Glu Met Ala Glu Asn Thr Arg Gly Val Leu Ala Ile Glu Trp
 435 440 445
 Leu Gly Ala Cys Gln Gly Leu Asp Leu Arg Lys Gly Leu Lys Thr Ser
 450 455 460
 Ala Lys Leu Glu Lys Ala Arg Gln Ala Leu Arg Ser Glu Val Ala His
 465 470 475 480
 Tyr Asp Arg Asp Arg Phe Phe Ala Pro Asp Ile Glu Lys Ala Val Glu
 485 490 495
 Leu Leu Ala Lys Gly Ser Leu Thr Gly Leu Leu Pro Ala Gly Leu Pro
 500 505 510
 Ser

 <210> 54
 <211> 513
 <212> PRT
 <213> Rhizobium meliloti

 <400> 54
 Met Ala Ser Ala Pro Gln Ile Thr Leu Arg Pro Gly Ser Val Pro Leu
 1 5 10 15

Ser Asp Leu Glu Thr Ile Tyr Trp Thr Gly Ala Pro Ala Arg Leu Asp
 20 25 30

Ala Ala Phe Asp Ala Gly Ile Ala Lys Ala Ala Ala Arg Ile Ala Glu
 35 40 45

Ile Val Ala Gly Asn Ala Pro Val Tyr Gly Ile Asn Thr Gly Phe Gly
 50 55 60

Lys Leu Ala Ser Ile Lys Ile Asp Ser Ser Asp Val Ala Thr Leu Gln
 65 70 75 80

Arg Asn Leu Ile Leu Ser His Cys Cys Gly Val Gly Gln Pro Leu Thr
 85 90 95

Glu Asp Ile Val Arg Leu Ile Met Ala Leu Lys Leu Ile Ser Leu Gly
 100 105 110

Arg Gly Ala Ser Gly Val Arg Leu Glu Leu Val Arg Leu Ile Glu Ala
 115 120 125

Met Leu Asp Lys Gly Val Ile Pro Leu Ile Pro Glu Lys Gly Ser Val
 130 135 140

Gly Ala Ser Gly Asp Leu Ala Pro Leu Ala His Met Ala Ala Val Met
 145 150 155 160

Met Gly His Gly Glu Ala Phe Phe Ala Gly Glu Arg Met Lys Gly Asp
 165 170 175

Ala Ala Leu Lys Ala Glu Ala Gly Leu Ser Pro Val Thr Leu Ala Ala
 180 185 190

Lys Glu Gly Leu Ala Leu Ile Asn Gly Thr Gln Val Ser Thr Ala Leu
 195 200 205

Ala Leu Ala Gly Leu Phe Arg Ala His Arg Ala Gly Gln Ala Ala Leu
 210 215 220

Ile Thr Gly Ala Leu Ser Thr Asp Ala Ala Met Gly Ser Ser Ala Pro
 225 230 235 240

Phe His Pro Asp Ile Gln His Cys Ala Ala Ile Arg Ala Arg Ser Thr
 245 250 255

Arg Ala Ala Ala Asn Leu Arg Gln Leu Leu Thr Gly Ser Pro Ile Arg
 260 265 270

Gln Ser His Ile Glu Gly Asp Glu Arg Val Gln Asp Pro Tyr Cys Ile
 275 280 285

Arg Cys Gln Pro Gln Val Asp Gly Ala Cys Leu Asp Leu Leu Arg Ser
 290 295 300

Val Ala Ala Thr Leu Thr Ile Glu Ala Asn Ala Val Thr Asp Asn Pro
 305 310 315 320

Leu Val Leu Ser Asp Asn Ser Val Val Ser Gly Gly Asn Phe His Ala
 325 330 335

 Glu Pro Val Ala Phe Ala Ala Asp Gln Ile Ala Leu Ala Val Cys Glu
 340 345 350

 Ile Gly Ala Ile Ser Gln Arg Arg Ile Ala Leu Leu Val Asp Pro Ala
 355 360 365

 Leu Ser Leu Arg Leu Pro Ala Phe Leu Ala Lys Lys Pro Gly Leu Asn
 370 375 380

 Ser Gly Leu Met Ile Ala Glu Val Thr Ser Ala Ala Leu Met Ser Glu
 385 390 395 400

 Asn Lys Gln Leu Ser His Pro Ala Ser Val Asp Ser Thr Pro Thr Ser
 405 410 415

 Ala Asn Gln Glu Asp His Val Ser Met Ala Cys His Gly Ala Arg Arg
 420 425 430

 Leu Leu Gln Met Thr Glu Asn Leu Phe Ser Ile Ile Gly Ile Glu Ala
 435 440 445

 Leu Ala Ala Val Gln Gly Ile Glu Phe Arg Ala Pro Leu Thr Thr Ser
 450 455 460

 Pro Glu Leu Gln Lys Ala Ala Ala Val Arg Gly Val Ser Ser Ser
 465 470 475 480

 Ile Glu Glu Asp Arg Tyr Met Ala Asp Asp Leu Lys Ala Ala Gly Asp
 485 490 495

 Leu Val Ala Ser Gly Arg Leu Ala Ala Val Ser Ala Gly Leu Pro
 500 505 510

Lys

<210> 55
 <211> 513
 <212> PRT
 <213> *Pseudomonas aeruginosa*

<400> 55
 Met Ser Asp Leu Pro Ser Val Val Phe Gly Asp Gly Pro Leu Arg Trp
 1 5 10 15

 Gln Glu Leu Val Ala Val Ala Arg His Gly Ala Arg Leu Glu Leu Ser
 20 25 30

 Ala Ala Ala Trp Ala Arg Ile Asp Asn Ala Arg Ala Ile Val Cys Arg
 35 40 45

 Ile Val Ala Asn Gly Glu Arg Ala Tyr Gly Ile Ser Thr Gly Leu Gly
 50 55 60

Ala Leu Cys Asp Val Leu Leu Glu Gly Glu Gln Leu Ala Glu Leu Ser
 65 70 75 80

Arg Asn Thr Leu Leu Ser His Ala Cys Gly Val Gly Glu Pro Leu Arg
 85 90 95

Asp Glu Gln Thr Arg Ala Ile Ile Cys Ala Ala Val Ala Asn Tyr Ser
 100 105 110

Gln Gly Lys Ser Gly Leu Asp Arg Ser Leu Val Glu Gly Leu Leu Ala
 115 120 125

Leu Leu Asn His Gly Ile Thr Pro Gln Val Pro Ala Gln Gly Ser Val
 130 135 140

Gly Tyr Ser Gly Asp Leu Thr His Met Ala His Val Gly Ile Ala Leu
 145 150 155 160

Leu Gly Ile Gly Glu Val Ser Asp Tyr Arg Gly Ser Val Val Pro Ala
 165 170 175

Ala Ala Ala Leu Ala Ala Glu Gly Leu Ala Thr Val Arg Leu Gly Ala
 180 185 190

Lys Asp Gly Leu Cys Leu Val Asn Gly Thr Pro Cys Met Thr Gly Leu
 195 200 205

Ala Cys Leu Ala Leu Asp Asp Ala Gln Arg Leu Ala Gln Trp Ala Asp
 210 215 220

Val Ile Gly Ala Met Ser Phe Glu Ala Leu Arg Gly Gln Leu Ala Ala
 225 230 235 240

Phe Asp Ala Glu Ile His Val Ala Leu Lys Pro His Pro Gly Met Gln
 245 250 255

Arg Val Ala Ala Asn Leu Arg Ala Leu Leu Ala Gly Ser Gln Val Leu
 260 265 270

Glu Asn Ala Arg Glu Gly Gly Ile Arg Thr Gln Asp Ala Leu Ser Ile
 275 280 285

Arg Ser Ile Pro Gln Ile His Gly Ala Cys Arg Asp Gln Leu Ala His
 290 295 300

Ala Arg Gln Ile Glu Thr Arg Glu Leu Asn Ser Ala Thr Asp Asn Pro
 305 310 315 320

Leu Leu Leu Gly Thr Pro Glu Val Val Ser Gln Ala Asn Pro His Gly
 325 330 335

Glu Ser Val Ala Met Ala Ala Asp Leu Leu Ala Ile Ala Val Ala Glu
 340 345 350

Leu Gly Gly Val Ala Glu Arg Arg Leu Asp Arg Leu Val Asn Pro Leu
 355 360 365

Val Ser Arg Gly Leu Pro Ala Phe Leu Val Gly Lys Pro Gly Val Asn
 370 375 380
 Ser Gly Met Met Ile Thr Gln Tyr Val Ala Ala Ser Leu Ala Gly Glu
 385 390 395 400
 Asn Arg Gln Leu Ala Gln Pro Ala Val Val Asp Asn Phe Val Thr Ser
 405 410 415
 Ala Leu Gln Glu Asp His Leu Ser Leu Gly Thr Ser Ala Ala Leu Lys
 420 425 430
 Leu Gly Arg Ala Leu Glu Asn Leu Arg Arg Ile Leu Ala Ile Glu Tyr
 435 440 445
 Leu Leu Ala Ala Gln Ala Phe Glu Phe Leu Ala Pro Gln Arg Phe Gly
 450 455 460
 Gln Gly Thr Ala Ala Ala Trp Gly Ile Leu Arg Glu Arg Val Pro Ala
 465 470 475 480
 Tyr Asp Thr Asp Arg Trp Leu Ala Pro Asp Ile Ala Ser Ala Ala Ala
 485 490 495
 Ile Leu Gly Glu Arg Lys Ser Leu Ala Arg Leu Ala Ala Ser Ile Gly
 500 505 510
 Asp

<210> 56
 <211> 513
 <212> PRT
 <213> Homo sapiens

<400> 56
 Lys Tyr Arg Glu Pro Glu Lys Tyr Ile Glu Leu Asp Gly Leu Thr Thr
 1 5 10 15

Glu Asp Leu Val Asn Leu Gly Lys Gly Arg Tyr Lys Ile Lys Leu Thr
 20 25 30

Pro Thr Ala Glu Lys Arg Val Gln Lys Ser Arg Glu Val Ile Asp Ser
 35 40 45

Ile Ile Lys Glu Lys Thr Val Val Tyr Gly Ile Thr Thr Gly Phe Gly
 50 55 60

Lys Phe Ala Thr Arg Thr Val Ile Pro Ile Asn Lys Leu Gln Leu Gln
 65 70 75 80

Val Asn Leu Val Arg Ser His Ser Ser Gly Val Gly Lys Pro Leu Ser
 85 90 95

Pro Glu Arg Cys Arg Met Leu Leu Ala Leu Arg Ile Asn Val Leu Ala
 100 105 110

Lys Gly Tyr Ser Gly Ile Ser Leu Glu Thr Leu Lys Gln Val Ile Glu
 115 120 125

Met Phe Asn Ala Ser Cys Leu Pro Tyr Val Pro Glu Lys Gly Thr Val
 130 135 140

Gly Ala Ser Gly Asp Leu Ala Pro Leu Ser His Leu Ala Leu Gly Leu
 145 150 155 160

Val Gly Glu Gly Lys Met Trp Ser Pro Lys Ser Gly Trp Ala Asp Ala
 165 170 175

Lys Tyr Val Leu Glu Ala His Gly Leu Lys Pro Val Ile Leu Lys Pro
 180 185 190

Lys Glu Gly Leu Ala Leu Ile Asn Gly Thr Gln Met Ile Thr Ser Leu
 195 200 205

Gly Cys Glu Ala Val Glu Arg Ala Ser Ala Ile Ala Arg Gln Ala Asp
 210 215 220

Ile Val Ala Ala Leu Thr Leu Glu Val Leu Lys Gly Thr Thr Lys Ala
 225 230 235 240

Phe Asp Thr Asp Ile His Ala Pro Leu Arg Pro His Arg Gly Gln Ile
 245 250 255

Glu Val Ala Phe Arg Phe Arg Ser Leu Leu Ser Asp Ser Glu Ile Ala
 260 265 270

Glu Ser His Arg Phe Cys Asp Gly Arg Val Gln Asp Ala Tyr Thr Leu
 275 280 285

Arg Cys Cys Pro Gln Val His Gly Val Val Asn Asp Thr Ile Ala Phe
 290 295 300

Val Lys Asn Ile Ile Thr Thr Glu Leu Asn Ser Ala Thr Asp Asn Pro
 305 310 315 320

Met Val Phe Ala Asn Gly Glu Thr Val Ser Gly Asn Phe His Gly
 325 330 335

Glu Tyr Pro Ala Lys Ala Leu Asp Tyr Leu Ala Ile Gly Ile His Glu
 340 345 350

Leu Ala Ala Ile Ser Glu Arg Arg Ile Glu Arg Leu Cys Asn Pro Ser
 355 360 365

Leu Ser Arg Glu Leu Pro Ala Phe Leu Val Ala Glu Gly Gly Leu Asn
 370 375 380

Ser Gly Phe Met Ile Ala His Cys Thr Ala Ala Ala Leu Val Ser Glu
 385 390 395 400

Asn Lys Ala Leu Cys His Pro Ser Ser Val Asp Ser Leu Ser Thr Ser
 405 410 415

Ala Ala Thr Glu Asp His Val Ser Met Gly Gly Trp Ala Ala Arg Lys
 420 425 430

Ala Leu Arg Val Ile Glu His Val Glu Gln Val Leu Ala Ile Glu Leu
 435 440 445

Leu Ala Ala Cys Gln Gly Ile Glu Phe Leu Arg Pro Leu Lys Thr Thr
 450 455 460

Thr Pro Leu Glu Lys Val Tyr Asp Leu Val Arg Ser Val Val Arg Pro
 465 470 475 480

Trp Ile Lys Asp Arg Phe Met Ala Pro Asp Ile Glu Ala Ala His Arg
 485 490 495

Leu Leu Leu Glu Gln Lys Val Trp Glu Val Ala Ala Pro Tyr Ile Glu
 500 505 510

Lys

<210> 57

<211> 513

<212> PRT

<213> Caenorhabditis elegans

<400> 57

Val Leu Ala Pro Pro Thr Lys Leu Leu Ile Leu Asp Gly Asn Ser Pro
 1 5 10 15

Glu Asp Leu Val Arg Cys Glu Lys Gly Glu Cys Ala Ile Gln Leu Ser
 20 25 30

Met Glu Ser Glu Asp Arg Ile Arg Lys Ala Arg Thr Phe Leu Glu Lys
 35 40 45

Ile Ala Ser Glu His Arg Ala Val Tyr Gly Val Thr Thr Gly Phe Gly
 50 55 60

Thr Phe Ser Asn Val Thr Ile Pro Pro Glu Lys Leu Lys Lys Leu Gln
 65 70 75 80

Leu Asn Leu Ile Arg Ser His Ala Thr Gly Tyr Gly Glu Pro Leu Ala
 85 90 95

Pro Asn Arg Ala Arg Met Leu Leu Ala Leu Arg Ile Asn Ile Leu Ala
 100 105 110

Lys Gly His Ser Gly Ile Ser Val Glu Asn Ile Lys Lys Met Ile Ala
 115 120 125

Ala Phe Asn Ala Phe Cys Val Ser Tyr Val Pro Gln Gln Gly Thr Val
 130 135 140

Gly Cys Ser Gly Asp Leu Cys Pro Leu Ala His Leu Ala Leu Gly Leu
 145 150 155 160

Leu Gly Glu Gly Lys Met Trp Ser Pro Thr Thr Gly Trp Gln Pro Ala
 165 170 175

 Asp Val Val Leu Lys Lys Asn Asn Leu Glu Pro Leu Glu Leu Gly Pro
 180 185 190

 Lys Glu Gly Leu Ala Leu Ile Asn Gly Thr Gln Met Val Thr Ala Leu
 195 200 205

 Gly Ala Tyr Thr Leu Glu Arg Ala His Asn Ile Ala Arg Gln Ala Asp
 210 215 220

 Val Ile Ala Ala Leu Ser Leu Asp Val Leu Lys Gly Thr Thr Arg Ala
 225 230 240

 Tyr Asp Pro Asp Ile His Arg Pro Ile Arg Pro His Arg Gly Gln Asn
 245 250 255

 Leu Ser Ala Leu Arg Leu Arg Ala Leu Leu Asn Pro Ser Gln Ile Ala
 260 265 270

 Glu Ser His Arg Asn Cys Thr Gly Lys Val Gln Asp Ala Tyr Thr Leu
 275 280 285

 Arg Cys Val Pro Gln Val His Gly Val Val His Asp Thr Ile Glu Phe
 290 295 300

 Val Arg Glu Ile Ile Thr Thr Glu Met Asn Ser Ala Thr Asp Asn Pro
 305 310 320

 Leu Val Phe Ala Asp Arg Glu Ile Ile Ser Gly Gly Asn Phe His Gly
 325 330 335

 Glu Tyr Pro Ala Lys Ala Leu Asp Phe Leu Ala Ile Ala Val Ala Glu
 340 345 350

 Leu Ala Gln Met Ser Glu Arg Arg Leu Glu Arg Leu Val Asn Lys Glu
 355 360 365

 Leu Ser Arg Gly Leu Pro Thr Phe Leu Thr Pro Asp Gly Gly Leu Asn
 370 375 380

 Ser Gly Phe Met Thr Val Gln Leu Cys Ala Ala Ser Leu Val Ser Glu
 385 390 400

 Asn Lys Val Leu Cys His Pro Ser Ser Val Asp Ser Ile Pro Thr Ser
 405 410 415

 Cys Asn Gln Glu Asp His Val Ser Met Gly Gly Phe Ala Ala Arg Lys
 420 425 430

 Ala Leu Thr Val Val Glu His Val Glu Ala Val Leu Ala Met Glu Leu
 435 440 445

 Leu Ala Ala Cys Gln Gly Ile Glu Phe Leu Lys Pro Leu Ile Ser Thr
 450 455 460

Ala Pro Leu His Lys Ile Tyr Gln Leu Val Arg Ser Lys Val Ala Pro
 465 470 475 480

Pro Asn Glu Asp Arg Tyr Met Lys Pro Glu Ile Asp Ala Val Leu Glu
 485 490 495

Met Ile Arg Glu Asn Arg Ile Trp Glu Ala Val Leu Pro His Leu Glu
 500 505 510

Thr

<210> 58

<211> 513

<212> PRT

<213> Thermoplasma acidophilum

<400> 58

Met Ala Ser Ala Pro Met Ile Glu Ile Asp Gly Arg Ser Leu Arg Val
 1 5 10 15

Glu Asp Val Tyr Ala Val Ala Val Glu Tyr Asp Arg Val Ser Ile Ser
 20 25 30

Asp Asp Thr Leu Lys Ala Val Glu Glu Lys His Glu Ala Phe Leu Lys
 35 40 45

Leu Ile Asn Ser Gly Lys Thr Val Tyr Gly Val Asn Thr Gly Phe Gly
 50 55 60

Ser Leu Leu Asn Val His Ile Glu Arg Asp Gln Glu Ile Glu Leu Gln
 65 70 75 80

Lys Asn Leu Ile Arg Ser His Ser Ser Gly Val Gly Asp Tyr Leu Glu
 85 90 95

Asn Arg Tyr Val Arg Ala Ile Met Ala Val Arg Leu Asn Ser Leu Ala
 100 105 110

Ala Gly Tyr Ser Ala Val Ser Ala Asp Leu Leu Asn Met Met Val Glu
 115 120 125

Met Leu Asn Arg Asp Val Ile Pro Ala Val Pro Lys Tyr Gly Ser Val
 130 135 140

Gly Ala Ser Gly Asp Leu Ala Pro Leu Ala His Ile Gly Leu Ala Met
 145 150 155 160

Met Gly Glu Gly Lys Ala Phe Asp Phe Glu Gly Arg Leu Met Asp Ser
 165 170 175

Ala Arg Ala Leu Glu Lys Ala Gly Leu Lys Pro Tyr Gln Phe Lys Glu
 180 185 190

Lys Glu Gly Val Ala Leu Ile Asn Gly Thr Ser Phe Met Ser Gly Ile
 195 200 205

Leu Ser Ile Ala Val Met Asp Ala His Asp Ile Leu Glu Asn Ala Ile
 210 215 220

Arg Ser Ala Leu Leu Ser Phe Glu Ala Leu Gly Gly Thr Ser Lys Ala
 225 230 235 240

Phe Thr Pro Trp Ile Leu Gly Ala Leu Arg Pro His Leu Gly Gln Val
 245 250 255

Ala Ile Gly Asn Arg Phe Arg Glu Tyr Leu Thr Gly Ser Asp Ile Val
 260 265 270

Ala Ser Lys Arg Ala Asp Ser Val Lys Val Gln Asp Ala Tyr Thr Leu
 275 280 285

Arg Cys Ile Pro Gln Val Tyr Gly Ser Val Ala Asp Val Ile Asp Tyr
 290 295 300

Val Glu Asn Val Leu Ser Val Glu Ile Asn Ser Ala Thr Asp Asn Pro
 305 310 315 320

Leu Val Phe Asn Gly Glu Glu Val Val Ser Gly Gly Asn Phe His Gly
 325 330 335

Glu Pro Val Ala Leu Ala Ala Asp Phe Leu Ala Ile Ala Leu Thr Asp
 340 345 350

Leu Gly Asn Met Val Glu Arg Arg Ile Ala Arg Leu Val Asp Thr Asn
 355 360 365

Leu Ser Arg Gly Leu Pro Pro Phe Leu Thr Pro Asp Ser Gly Leu Asn
 370 375 380

Ser Gly Tyr Met Ile Pro Gln Tyr Thr Ala Ala Leu Cys Asn Arg
 385 390 395 400

Asn Lys Val Leu Ala Tyr Pro Ser Ser Ala Asp Thr Ile Pro Thr Ser
 405 410 415

Ala Asn Gln Glu Asp His Val Ser Met Gly Ala Thr Gly Ser Leu Lys
 420 425 430

Leu Leu Glu Ile Ile Asp Asn Val Arg Tyr Ile Ile Ala Ile Glu Tyr
 435 440 445

Leu Leu Gly Ser Gln Ala Leu Glu Phe Thr Asp Lys Leu Gly Met Ser
 450 455 460

Pro Ser Thr Arg Lys Ile Tyr Glu Lys Ile Arg Glu Lys Val Glu Lys
 465 470 475 480

Leu Asp His Asp Arg Pro Pro Ser Phe Asp Ile Glu Thr Ile Arg Lys
 485 490 495

Met Met Asp Lys Lys Glu Phe Ile Ser Ala Leu Pro Ala His Leu Pro
 500 505 510

Ala

<210> 59
<211> 513
<212> PRT
<213> Mus sp.

<400> 59
Lys Tyr Arg Glu Pro Glu Lys Tyr Ile Ala Leu Asp Gly Asp Ser Thr
1 5 10 15
Glu Asp Leu Val Asn Leu Gly Lys Gly Arg Tyr Lys Ile Lys Leu Thr
20 25 30
Ser Ile Ala Glu Lys Lys Val Gln Gln Ser Arg Glu Val Ile Asp Ser
35 40 45
Ile Ile Lys Glu Arg Thr Val Val Tyr Gly Ile Thr Thr Gly Phe Gly
50 55 60
Lys Phe Ala Thr Arg Thr Val Ile Pro Ala Asn Lys Leu Gln Leu Gln
65 70 75 80
Val Asn Leu Val Arg Ser His Ser Ser Gly Val Gly Lys Pro Leu Ser
85 90 95
Pro Glu Arg Cys Arg Met Leu Leu Ala Leu Arg Ile Asn Val Leu Ala
100 105 110
Lys Gly Tyr Ser Gly Ile Ser Leu Glu Thr Leu Lys Gln Val Ile Glu
115 120 125
Ala Phe Asn Ala Ser Cys Leu Ser Tyr Val Pro Glu Lys Gly Thr Val
130 135 140
Gly Ala Ser Gly Asp Leu Ala Pro Leu Ser His Leu Ala Leu Gly Leu
145 150 155 160
Ile Gly Glu Gly Lys Met Trp Ser Pro Lys Ser Gly Trp Ala Asp Ala
165 170 175
Lys Tyr Val Leu Glu Ala His Gly Leu Lys Pro Ile Val Leu Lys Pro
180 185 190
Lys Glu Gly Leu Ala Leu Ile Asn Gly Thr Gln Met Ile Thr Ser Leu
195 200 205
Gly Cys Glu Ala Leu Glu Arg Ala Ser Ala Ile Ala Arg Gln Ala Asp
210 215 220
Ile Val Ala Ala Leu Thr Leu Glu Val Leu Lys Gly Thr Thr Lys Ala
225 230 235 240
Phe Asp Thr Asp Ile His Ala Pro Val Arg Pro His Arg Gly Gln Ile
245 250 255

Glu Val Ala Phe Arg Phe Arg Ser Leu Leu Ser Asp Ser Glu Ile Ala
 260 265 270
 Glu Ser His Arg Phe Cys Asp Gly Arg Val Gln Asp Ala Tyr Thr Leu
 275 280 285
 Arg Cys Cys Pro Gln Val His Gly Val Val Asn Asp Thr Ile Ala Phe
 290 295 300
 Val Lys Asp Ile Ile Thr Thr Glu Leu Asn Ser Ala Thr Asp Asn Pro
 305 310 315 320
 Met Val Phe Ala Ser Gly Glu Thr Ile Ser Gly Gly Asn Phe His Gly
 325 330 335
 Glu Tyr Pro Ala Lys Ala Leu Asp Tyr Leu Ala Ile Gly Val His Glu
 340 345 350
 Leu Ala Ala Ile Ser Glu Arg Arg Ile Glu Arg Leu Cys Asn Pro Ser
 355 360 365
 Leu Ser Arg Glu Leu Pro Ala Phe Leu Val Ala Glu Gly Gly Leu Asn
 370 375 380
 Ser Gly Phe Met Ile Ala His Cys Thr Ala Ala Ala Leu Val Ser Glu
 385 390 395 400
 Ser Lys Ala Leu Cys His Pro Ser Ser Val Asp Ser Leu Ser Thr Ser
 405 410 415
 Ala Ala Thr Glu Asp His Val Ser Met Gly Gly Trp Ala Ala Arg Lys
 420 425 430
 Ala Leu Arg Val Val Glu His Val Glu Gln Val Leu Ala Ile Glu Leu
 435 440 445
 Leu Ala Ala Cys Gln Gly Ile Glu Phe Leu Arg Pro Leu Lys Thr Thr
 450 455 460
 Thr Pro Leu Glu Lys Val Tyr Asp Leu Val Arg Ser Val Val Arg Pro
 465 470 475 480
 Trp Ile Lys Asp Arg Phe Met Ala Pro Asp Ile Glu Ala Ala His Arg
 485 490 495
 Leu Leu Leu Asp Gln Lys Val Trp Glu Val Ala Ala Pro Tyr Ile Glu
 500 505 510
 Lys

<210> 60
 <211> 513
 <212> PRT
 <213> Mus musculus

<400> 60
 Lys Tyr Arg Glu Pro Glu Lys Tyr Ile Ala Leu Asp Gly Asp Ser Thr
 1 5 10 15
 Glu Asp Leu Val Asn Leu Gly Lys Gly Arg Tyr Lys Ile Lys Leu Thr
 20 25 30
 Ser Ile Ala Glu Lys Lys Val Gln Gln Ser Arg Glu Val Ile Asp Ser
 35 40 45
 Ile Ile Lys Glu Arg Thr Val Val Tyr Gly Ile Thr Thr Gly Phe Gly
 50 55 60
 Lys Phe Ala Thr Arg Thr Val Ile Pro Ala Asn Lys Leu Gln Leu Gln
 65 70 75 80
 Val Asn Leu Val Arg Ser His Ser Ser Gly Val Gly Lys Pro Leu Ser
 85 90 95
 Pro Glu Arg Cys Arg Met Leu Leu Ala Leu Arg Ile Asn Val Leu Ala
 100 105 110
 Lys Gly Tyr Ser Gly Ile Ser Leu Glu Thr Leu Lys Gln Val Ile Glu
 115 120 125
 Ala Phe Asn Ala Ser Cys Leu Ser Tyr Val Pro Glu Lys Gly Thr Val
 130 135 140
 Gly Ala Ser Gly Asp Leu Ala Pro Leu Ser His Leu Ala Leu Gly Leu
 145 150 155 160
 Ile Gly Glu Gly Lys Met Trp Ser Pro Lys Ser Gly Trp Ala Asp Ala
 165 170 175
 Lys Tyr Val Leu Glu Ala His Gly Leu Lys Pro Ile Val Leu Lys Pro
 180 185 190
 Lys Glu Gly Leu Ala Leu Ile Asn Gly Thr Gln Met Ile Thr Ser Leu
 195 200 205
 Gly Cys Glu Ala Leu Glu Arg Ala Ser Ala Ile Ala Arg Gln Ala Asp
 210 215 220
 Ile Val Ala Ala Leu Thr Leu Glu Val Leu Lys Gly Thr Thr Lys Ala
 225 230 235 240
 Phe Asp Thr Asp Ile His Ala Pro Val Arg Pro His Arg Gly Gln Ile
 245 250 255
 Glu Val Ala Phe Arg Phe Arg Ser Leu Leu Ser Asp Ser Glu Ile Ala
 260 265 270
 Glu Ser His Arg Phe Cys Asp Gly Arg Val Gln Asp Ala Tyr Thr Leu
 275 280 285
 Arg Cys Cys Pro Gln Val His Gly Val Val Asn Asp Thr Ile Ala Phe
 290 295 300

Val Lys Asp Ile Ile Thr Thr Glu Leu Asn Ser Ala Thr Asp Asn Pro
 305 310 315 320
 Met Val Phe Ala Ser Gly Glu Thr Ile Ser Gly Gly Asn Phe His Gly
 325 330 335
 Glu Tyr Pro Ala Lys Ala Leu Asp Tyr Leu Ala Ile Gly Val His Glu
 340 345 350
 Leu Ala Ala Ile Ser Glu Arg Arg Ile Glu Arg Leu Cys Asn Pro Ser
 355 360 365
 Leu Ser Arg Glu Leu Pro Ala Phe Leu Val Ala Glu Gly Gly Leu Asn
 370 375 380
 Ser Gly Phe Met Ile Ala His Cys Thr Ala Ala Leu Val Ser Glu
 385 390 395 400
 Ser Lys Ala Leu Cys His Pro Ser Ser Val Asp Ser Leu Ser Thr Ser
 405 410 415
 Ala Ala Thr Glu Asp His Val Ser Met Gly Gly Trp Ala Ala Arg Lys
 420 425 430
 Ala Leu Arg Val Val Glu His Val Glu Gln Val Leu Ala Ile Glu Leu
 435 440 445
 Leu Ala Ala Cys Gln Gly Ile Glu Phe Leu Arg Pro Leu Lys Thr Thr
 450 455 460
 Thr Pro Leu Glu Lys Val Tyr Asp Leu Val Arg Ser Val Val Arg Pro
 465 470 475 480
 Trp Ile Lys Asp Arg Phe Met Ala Pro Asp Ile Glu Ala Ala His Arg
 485 490 495
 Leu Leu Leu Asp Gln Lys Val Trp Glu Val Ala Ala Pro Tyr Ile Glu
 500 505 510
 Lys

<210> 61
 <211> 513
 <212> PRT
 <213> Rattus sp.

<400> 61
 Lys Tyr Arg Glu Pro Glu Lys Tyr Ile Ala Leu Asp Gly Asp Ser Thr
 1 5 10 15
 Glu Asp Leu Val Asn Leu Gly Lys Gly His Tyr Lys Ile Lys Leu Thr
 20 25 30
 Ser Ile Ala Glu Lys Lys Val Gln Gln Ser Arg Glu Val Ile Asp Ser
 35 40 45

Ile	Ile	Lys	Glu	Arg	Thr	Val	Val	Tyr	Gly	Ile	Thr	Thr	Gly	Phe	Gly
50						55				60					
Lys	Phe	Ala	Thr	Arg	Thr	Val	Ile	Pro	Ala	Asn	Lys	Leu	Gln	Leu	Gln
65						70				75				80	
Val	Asn	Leu	Val	Arg	Ser	His	Ser	Ser	Gly	Val	Gly	Lys	Pro	Leu	Ser
						85				90				95	
Pro	Glu	Arg	Cys	Arg	Met	Leu	Leu	Ala	Leu	Arg	Ile	Asn	Val	Leu	Ala
					100				105				110		
Lys	Gly	Tyr	Ser	Gly	Ile	Ser	Leu	Glu	Thr	Leu	Lys	Gln	Val	Ile	Glu
					115			120			125				
Val	Phe	Asn	Ala	Ser	Cys	Leu	Ser	Tyr	Val	Pro	Glu	Lys	Gly	Thr	Val
						130			135			140			
Gly	Ala	Ser	Gly	Asp	Leu	Ala	Pro	Leu	Ser	His	Leu	Ala	Leu	Gly	Leu
					145		150			155			160		
Ile	Gly	Glu	Gly	Lys	Met	Trp	Ser	Pro	Lys	Ser	Gly	Trp	Ala	Asp	Ala
					165			170			175				
Lys	Tyr	Val	Leu	Glu	Ala	His	Gly	Leu	Lys	Pro	Ile	Val	Leu	Lys	Pro
					180			185			190				
Lys	Glu	Gly	Leu	Ala	Leu	Ile	Asn	Gly	Thr	Gln	Met	Ile	Thr	Ser	Leu
					195			200			205				
Gly	Cys	Glu	Ala	Val	Glu	Arg	Ala	Ser	Ile	Ala	Arg	Gln	Ala	Asp	
					210		215			220					
Ile	Val	Ala	Ala	Leu	Thr	Leu	Glu	Val	Leu	Lys	Gly	Thr	Thr	Lys	Ala
					225		230			235			240		
Phe	Asp	Thr	Asp	Ile	His	Ala	Pro	Val	Arg	Pro	His	Arg	Gly	Gln	Ile
					245			250			255				
Glu	Val	Ala	Phe	Arg	Phe	Arg	Ser	Leu	Leu	Ser	Asp	Ser	Glu	Ile	Ala
					260			265			270				
Glu	Ser	His	Arg	Phe	Cys	Asp	Gly	Arg	Val	Gln	Asp	Ala	Tyr	Thr	Leu
					275		280			285					
Arg	Cys	Cys	Pro	Gln	Val	His	Gly	Val	Val	Asn	Asp	Thr	Ile	Ala	Phe
					290		295			300					
Val	Lys	Asp	Ile	Ile	Thr	Thr	Glu	Leu	Asn	Ser	Ala	Thr	Asp	Asn	Pro
					305		310			315			320		
Met	Val	Phe	Ala	Ser	Gly	Glu	Thr	Ile	Ser	Gly	Gly	Asn	Phe	His	Gly
					325			330			335				
Glu	Tyr	Pro	Ala	Lys	Ala	Leu	Asp	Tyr	Leu	Ala	Ile	Gly	Val	His	Glu
					340		345			350					

Leu Ala Ala Ile Ser Glu Arg Arg Ile Glu Arg Leu Cys Asn Pro Ser
 355 360 365
 Leu Ser Arg Glu Leu Pro Ala Phe Leu Val Ala Glu Gly Gly Leu Asn
 370 375 380
 Ser Gly Phe Met Ile Ala His Cys Thr Ala Ala Ala Leu Val Ser Glu
 385 390 395 400
 Ser Lys Ala Leu Cys His Pro Ser Ser Val Asp Ser Leu Ser Thr Ser
 405 410 415
 Ala Ala Thr Glu Asp His Val Ser Met Gly Gly Trp Ala Ala Arg Lys
 420 425 430
 Ala Leu Arg Val Ile Glu His Val Glu Gln Val Leu Ala Ile Glu Leu
 435 440 445
 Leu Ala Ala Cys Gln Gly Ile Glu Phe Leu Arg Pro Leu Lys Thr Thr
 450 455 460
 Thr Pro Leu Glu Lys Val Tyr Asp Leu Val Arg Ser Val Val Arg Pro
 465 470 475 480
 Trp Ile Lys Asp Arg Phe Met Ala Pro Asp Ile Glu Ala Ala His Arg
 485 490 495
 Leu Leu Leu Asp Gln Lys Val Trp Glu Val Ala Ala Pro Tyr Ile Glu
 500 505 510
 Lys

<210> 62
 <211> 513
 <212> PRT
 <213> Unknown Organism

<220>
 <223> Description of Unknown Organism: Uncultured bacterium
 pCosAS1

<400> 62
 Met Ala Ser Met Asn Ala Leu Thr Leu Thr Pro Gly Thr Leu Thr Leu
 1 5 10 15

Ala Gln Leu Arg Gln Val Trp Gln Gln Pro Leu Gln Leu Thr Leu Asp
 20 25 30

Glu Ser Ala His Glu Ala Ile Asn Asp Ser Val Ala Cys Val Glu Ala
 35 40 45

Ile Val Ala Glu Gly Arg Thr Ala Tyr Gly Ile Asn Thr Gly Phe Gly
 50 55 60

Leu Leu Ala Gln Thr Arg Ile Ala Thr His Asp Leu Glu Asn Leu Gln
 65 70 75 80

Arg Ser Leu Val Leu Ser His Ala Ala Gly Val Gly Glu Pro Leu Asp
 85 90 95
 Asp Asp Ile Val Arg Leu Met Met Val Leu Lys Ile Asn Ser Leu Ala
 100 105 110
 Arg Gly Phe Ser Gly Ile Arg Leu Ser Val Ile Gln Ala Leu Ile Ala
 115 120 125
 Leu Val Asn Ala Gly Val Tyr Ser Val Asp Pro Ala Lys Gly Ser Val
 130 135 140
 Gly Ala Ser Gly Asp Leu Ala Pro Leu Ala His Met Ser Leu Thr Leu
 145 150 155 160
 Leu Gly Glu Gly Lys Ala Arg Asp Tyr Arg Gly Glu Trp Leu Pro Ala
 165 170 175
 Ala Thr Ala Leu Gln Lys Ala Gly Leu Ala Pro Val Thr Leu Ala Ala
 180 185 190
 Lys Glu Gly Leu Ala Leu Leu Asn Gly Thr Gln Ala Ser Thr Ala Phe
 195 200 205
 Ala Leu Arg Gly Leu Phe Glu Ala Glu Asp Leu Phe Ala Ser Ala Val
 210 215 220
 Val Cys Gly Ala Leu Thr Thr Glu Ala Val Leu Gly Ser Arg Arg Pro
 225 230 235 240
 Phe Asp Ala Arg Ile His Glu Pro Val Arg Gly Gln Arg Gly Gln Ile
 245 250 255
 Asp Ala Ala Ala Leu Phe Arg His Val Leu Thr Asp Thr Ser Ala Ile
 260 265 270
 Ala Ser His His Asn Cys Asp Gly Lys Val Gln Asp Pro Tyr Ser Leu
 275 280 285
 Arg Cys Gln Pro Gln Val Met Gly Ala Cys Leu Thr Gln Met Arg Gln
 290 295 300
 Val Ala Glu Val Leu Leu Val Glu Ser Asn Ala Val Ser Asp Asn Pro
 305 310 315 320
 Leu Val Phe Ala Ala Asn Glu Met Val Phe Arg Gly Asn Phe His Ala
 325 330 335
 Glu Pro Val Ala Met Ala Ala Asp Asn Leu Ala Leu Ala Ile Ala Glu
 340 345 350
 Ile Gly Ala Leu Ser Glu Arg Arg Ile Ala Leu Met Met Asp Lys His
 355 360 365
 Met Ser Gln Asp Leu Pro Pro Phe Leu Val Arg Asn Gly Gly Val Asn
 370 375 380

Ser Gly Phe Met Ile Ala Gln Val Thr Ala Ala Ala Leu Ala Ser Glu
 385 390 395 400

Asn Lys Gly Leu Cys His Pro Thr Ser Val Asp Lys Ile Pro Pro Ser
 405 410 415

Ala Asn Gln Glu Asp His Val Ser Met Ala Pro Ala Ala Gly Arg Arg
 420 425 430

Leu Trp Glu Met Ala Gly Asn Thr Arg Gly Val Leu Ala Val Glu Trp
 435 440 445

Leu Ala Ala Cys Gln Gly Ala Asp Leu Arg Asp Gly Leu Thr Ser Ser
 450 455 460

Pro Leu Leu Glu Gln Ala Arg Gln Ser Cys Gly Glu Gln Val Ala His
 465 470 475 480

Tyr Asp Asp Asp Arg Phe Phe Ala Pro Asp Ile Glu Ala Ala Ile Ser
 485 490 495

Leu Leu Asn Lys Gly Ser Leu Val Gly Leu Leu Pro Ala Phe Leu Pro
 500 505 510

Ala

<210> 63

<211> 513

<212> PRT

<213> Rhizobium meliloti

<400> 63

Met Ala Ser Ala Met Gly Glu Met Ile Ser Leu Asp Gly Pro Leu Thr
 1 5 10 15

Trp Arg Glu Ile Ala Ser Ile Ala Glu Gly Ala Ser Leu Asp Leu Ser
 20 25 30

Gly Pro Ala Arg Leu Arg Ile Ala Gln Ala Arg Arg Ile Val Asp Ala
 35 40 45

Leu Val Glu Arg Gly Ile Arg Gly Tyr Gly Ile Asn Thr Gly Val Gly
 50 55 60

Ala Leu Cys Asp Val Ile Ile Ser Arg Glu Asn Gln Gln Ala Leu Ser
 65 70 75 80

Arg Asn Ile Ile Leu Ser His Ala Cys Gly Val Gly Asp Pro Leu Gly
 85 90 95

Arg Val Glu Ala Arg Ala Val Met Ala Ala Gln Ile Ala Asn Leu Thr
 100 105 110

His Gly Tyr Ser Gly Val Arg Val Glu Thr Ala Glu Met Leu Leu Ala
 115 120 125

Leu Leu Asn Ala Asp Ile Ile Pro Leu Ile Pro Ser Arg Gly Ser Val
 130 135 140
 Gly Tyr Ser Gly Asp Leu Ala Pro Leu Thr His Ala Ala Leu Val Leu
 145 150 155 160
 Ile Gly His Gly Ser Ala Met Gln Gly Thr Glu Arg Leu Ser Gly Ala
 165 170 175
 Asp Ala Leu Phe Ala Arg Leu Gly Leu Ala Pro Leu Arg Leu Glu Ala
 180 185 190
 Lys Glu Gly Leu Ser Leu Val Asn Gly Thr Pro Cys Ala Thr Gly Leu
 195 200 205
 Ala Ala Leu Ala Leu Ala Arg Thr Glu Arg Leu Phe Ala Trp Ala Asp
 210 215 220
 Ala Ala Ala Ala Met Thr Tyr Glu Ala Asn Leu Gly Ser Gln Ala Asn
 225 230 235 240
 Ala Phe Ala Glu Leu Pro Leu Ala Leu Arg Gln Ser Pro Gly Leu Ser
 245 250 255
 Ala Val Gly Glu Gly Leu Arg Asp Trp Leu Ala Asp Ser Pro Met Leu
 260 265 270
 Ala Gly His Arg Thr Ala Gly Thr Arg Thr Gln Asp Pro Leu Ser Leu
 275 280 285
 Arg Ala Val Pro Gln Val His Gly Ala Ala Arg Asp Ala Phe Gly Gln
 290 295 300
 Val Ala Glu Ile Val Asp Arg Glu Leu Ala Ser Val Thr Asp Asn Pro
 305 310 315 320
 Ala Val Ala Gly Ser Pro Glu Val His Ser Gln Ala His Ala Val Gly
 325 330 335
 Ala Ala Leu Gly Leu Ala Met Asp Ser Leu Ala Val Ala Val Ala Glu
 340 345 350
 Val Ala Ala Ile Ser Glu Arg Arg Ile Asp Arg Leu Val Asn Pro Leu
 355 360 365
 Val Ser Arg Gly Leu Pro Ala Phe Leu Ala Gly Asp Ser Gly Val Ser
 370 375 380
 Ser Gly Phe Met Ile Ala Gln Tyr Thr Ala Ala Leu Val Ala Glu
 385 390 395 400
 Asn Arg Arg Leu Ala Ala Pro Ala Ser Leu Asp Gly Gly Ile Thr Ser
 405 410 415
 Ala Leu Gln Glu Asp Met Leu Thr His Ala Thr Pro Ala Ala Trp Lys
 420 425 430

Ala Leu Ser Ile Val Asp Asn Leu Glu Arg Ile Leu Ala Ile Glu Leu
 435 440 445
 Leu Ala Ala His Arg Pro Met Ser Cys Ser Arg Lys Arg Arg Ala Arg
 450 455 460
 Arg Asn Ala Pro Leu Pro Phe Thr Gly Thr Tyr Ala Arg Arg Ser Pro
 465 470 475 480
 Pro Ile Ala Thr Ile Val Arg Ser Ala Glu Leu Glu Ala Ala Tyr Asp
 485 490 495
 Leu Leu Ala Asn Gly Ser Val His Lys Ala Leu Glu Ala His Leu Pro
 500 505 510
 Ala

<210> 64
 <211> 513
 <212> PRT
 <213> Halobacterium sp.

<400> 64
 Met Ala Ser Ala Pro Gln Ile Thr Leu Gly Leu Ser Gly Ala Thr Ala
 1 5 10 15
 Asp Asp Val Ile Ala Val Ala Arg His Glu Ala Arg Ile Ser Ile Ser
 20 25 30
 Pro Gln Val Leu Glu Glu Leu Ala Ser Val Arg Ala His Ile Asp Ala
 35 40 45
 Leu Ala Ser Ala Asp Thr Pro Val Tyr Gly Ile Ser Thr Gly Phe Gly
 50 55 60
 Ala Met Ser Asp Thr Arg Ile Asp Ala Ala Asp Arg Glu Ala Leu Gln
 65 70 75 80
 Ala Asn Leu Val Arg Ser His Ala Ala Gly Ala Gly Ser Glu Leu Asp
 85 90 95
 Thr Ala Ala Val Arg Ala Leu Leu Val Thr Arg Leu Asn Ala Leu Ala
 100 105 110
 Lys Gly Tyr Ser Gly Ile Arg Glu Arg Val Leu Asp Val Leu Val Gly
 115 120 125
 Leu Leu Asn Glu Gly Val His Pro Val Val Pro Ser Arg Gly Ser Leu
 130 135 140
 Gly Ala Ser Gly Asp Leu Ala Pro Leu Ala His Met Ser Arg Val Leu
 145 150 155 160
 Ile Gly Glu Gly Gln Ala Thr Asp Val Ala Gly Glu Arg Met Pro Ala
 165 170 175

Ala Glu Ala Leu Ala Ala Ala Asp Leu Glu Pro Val Thr Leu Gln Ala
 180 185 190

 Lys Glu Gly Leu Ala Leu Ile Asn Gly Thr Gln Leu Thr Thr Gly Val
 195 200 205

 Ala Ala Leu Ala Leu Val Asp Ala Glu Arg Val Leu Arg Ser Ala Asp
 210 215 220

 Thr Ala Gly Ala Leu Thr Thr Glu Val Thr Met Ser Thr Thr Ala Ser
 225 230 235 240

 Cys Ala Pro Ala Ile His Glu Pro Val Arg Pro His Asp Gly Gln Ala
 245 250 255

 Val Ser Ala Arg His Ile Arg Asn Leu Thr Ala Gly Ser Glu Val Leu
 260 265 270

 Asp His His Arg Asp Cys Asp Gly Arg Val Gln Asp Ala Tyr Ser Ile
 275 280 285

 Arg Cys Leu Pro Gln Val His Gly Ala Val Arg Asp Ala Leu Asp His
 290 295 300

 Leu Arg Ala Ala Val Ala Thr Glu Leu Asn Ser Ala Thr Asp Asn Pro
 305 310 315 320

 Leu Val Phe Pro Ser Gly Thr Val Val Ser Gly Gly Asn Phe His Gly
 325 330 335

 Glu Val Leu Ala Leu Arg Leu Gly Tyr Ala Ala Ser Ala Leu Ala Glu
 340 345 350

 Leu Ala Ala Ile Ser Glu Arg Arg Thr Asp Arg Leu Leu Asn Pro Glu
 355 360 365

 Thr Gln Glu Pro Leu Glu Pro Phe Leu Ala Pro Asp Ser Gly Leu His
 370 375 380

 Ser Gly Leu Met Ile Pro Gln Tyr Thr Ala Ala Ser Leu Val Asn Asp
 385 390 395 400

 Leu Arg Ser Leu Gly Gln Pro Ala Thr Leu Asp Asn Ala Ser Val Ser
 405 410 415

 Gly Ala Gln Glu Asp His Val Ser Met Ser Ala Gly Ala Ala Tyr Asn
 420 425 430

 Phe Arg Glu Ala Val Glu Lys Ala Ala Thr Val Val Gly Val Glu Leu
 435 440 445

 Leu Cys Gly Ala Gln Gly Arg Glu Phe Leu Asp Pro Leu Ala Leu Gly
 450 455 460

 Ala Gly Thr Ala Ala Ala Tyr Asp Leu Val Arg Ser Glu Val Ser Glu
 465 470 475 480

Pro Ala Gly Asp Arg Ala Leu Ala Asp Asp Met Ala Ala Val Gly Asp
 485 490 495

Leu Val Arg Ala Gly Leu Val Glu Asp Ala Val Ala Arg Ala Leu Asp
 500 505 510

Ala

<210> 65
 <211> 504
 <212> PRT
 <213> Streptomyces griseus

<400> 65
 Val Val Val Gly Thr Ser Gly Thr Thr Ala Glu Asp Val Val Ala Val
 1 5 10 15

Ala Arg His Gly Ala Arg Val Glu Leu Ser Ala Ala Val Glu Ala
 20 25 30

Leu Ala Ala Ala Arg Leu Ile Val Asp Ala Leu Ala Ala Lys Pro Glu
 35 40 45

Pro Val Tyr Gly Val Ser Thr Gly Phe Gly Ala Leu Ala Ser Arg His
 50 55 60

Ile Gly Thr Glu Leu Arg Ala Gln Leu Gln Arg Asn Ile Val Arg Ser
 65 70 75 80

His Ala Ala Gly Met Gly Pro Arg Val Glu Arg Glu Val Val Arg Ala
 85 90 95

Leu Met Phe Leu Arg Leu Lys Thr Val Ala Ser Gly His Thr Gly Val
 100 105 110

Arg Pro Glu Val Ala Gln Thr Met Ala Asp Val Leu Asn Ala Gly Ile
 115 120 125

Thr Pro Val Val His Glu Tyr Gly Ser Leu Gly Cys Ser Gly Asp Leu
 130 135 140

Ala Pro Leu Ser His Cys Ala Leu Thr Leu Met Gly Glu Gly Glu Ala
 145 150 155 160

Glu Gly Pro Asp Gly Thr Val Arg Pro Ala Gly Glu Leu Leu Ala Ala
 165 170 175

His Gly Ile Ala Pro Val Glu Leu Arg Glu Lys Glu Gly Leu Ala Leu
 180 185 190

Leu Asn Gly Thr Asp Gly Met Leu Gly Met Leu Val Met Ala Leu Ala
 195 200 205

Asp Leu Arg Asn Leu Tyr Thr Ser Ala Asp Ile Thr Ala Ala Leu Ser
 210 215 220

Leu Glu Ala Leu Leu Gly Thr Asp Lys Val Leu Ala Pro Glu Leu His
 225 230 235 240

Ala Ile Arg Pro His Pro Gly Gln Gly Val Ser Ala Asp Asn Met Ser
 245 250 255

Arg Val Leu Ala Gly Ser Gly Leu Thr Gly His His Gln Asp Asp Ala
 260 265 270

Pro Arg Val Gln Asp Ala Tyr Ser Val Arg Cys Ala Pro Gln Val Asn
 275 280 285

Gly Ala Gly Arg Asp Thr Leu Asp His Ala Ala Leu Val Ala Gly Arg
 290 295 300

Glu Leu Ala Ser Ser Val Asp Asn Pro Val Val Leu Pro Asp Gly Arg
 305 310 315 320

Val Glu Ser Asn Gly Asn Phe His Gly Ala Pro Val Ala Tyr Val Leu
 325 330 335

Asp Phe Leu Ala Ile Val Ala Asp Leu Gly Ser Ile Cys Glu Arg
 340 345 350

Arg Thr Asp Arg Leu Leu Asp Lys Asn Arg Ser His Gly Leu Pro Pro
 355 360 365

Phe Leu Ala Asp Asp Ala Gly Val Asp Ser Gly Leu Met Ile Ala Gln
 370 375 380

Tyr Thr Gln Ala Ala Leu Val Ser Glu Met Lys Arg Leu Ala Val Pro
 385 390 395 400

Ala Ser Ala Asp Ser Ile Pro Ser Ser Ala Met Gln Glu Asp His Val
 405 410 415

Ser Met Gly Trp Ser Ala Ala Arg Lys Leu Arg Thr Ala Val Asp Asn
 420 425 430

Leu Ala Arg Ile Val Ala Val Glu Leu Tyr Ala Ala Thr Arg Ala Ile
 435 440 445

Glu Leu Arg Ala Ala Glu Gly Leu Thr Pro Ala Pro Ala Ser Glu Ala
 450 455 460

Val Val Ala Ala Leu Arg Ala Ala Gly Ala Glu Gly Pro Gly Pro Asp
 465 470 475 480

Arg Phe Leu Ala Pro Asp Leu Ala Ala Asp Thr Phe Val Arg Glu
 485 490 495

Gly Arg Leu Val Ala Ala Val Glu
 500

<210> 66
 <211> 502
 <212> PRT

<213> Corynebacteriaceae sp.

<400> 66

Ile	Thr	Leu	Gly	Leu	Ser	Gly	Ala	Thr	Ala	Asp	Asp	Val	Ile	Ala	Val	
1				5					10				15			
Ala Arg His Glu Ala Arg Ile Ser Ile Ser Pro Gln Val Leu Glu Glu																
				20					25					30		
Leu Ala Ser Val Arg Ala His Ile Asp Ala Leu Ala Ser Ala Asp Thr																
				35					40					45		
Pro Val Tyr Gly Ile Ser Thr Gly Phe Gly Ala Leu Ala Thr Arg His																
				50					55					60		
Ile Ala Pro Glu Asp Arg Ala Lys Leu Gln Arg Ser Leu Ile Arg Ser																
				65					70					75		
His Ala Ala Gly Met Gly Glu Pro Val Glu Arg Glu Val Val Arg Ala																
				85					90					95		
Leu Met Phe Leu Arg Ala Lys Thr Leu Ala Ser Gly Arg Thr Gly Val																
				100					105					110		
Arg Pro Val Val Leu Glu Thr Met Val Gly Met Leu Asn Ala Gly Ile																
				115					120					125		
Thr Pro Val Val Arg Glu Tyr Gly Ser Leu Gly Cys Ser Gly Asp Leu																
				130					135					140		
Ala Pro Leu Ser His Cys Ala Leu Val Leu Met Gly Glu Gly Glu Ala																
				145					150					155		
160																
Thr Asp Ala His Gly Asp Ile Arg Pro Val Pro Glu Leu Phe Ala Glu																
				165					170					175		
Ala Gly Leu Thr Pro Val Glu Leu Ala Glu Lys Glu Gly Leu Ala Leu																
				180					185					190		
Val Asn Gly Thr Asp Gly Met Leu Gly Gln Leu Ile Met Ala Leu Ala																
				195					200					205		
Asp Leu Asp Glu Leu Leu Asp Ile Ala Asp Ala Thr Ala Ala Met Ser																
				210					215					220		
Val Glu Ala Gln Leu Gly Thr Asp Gln Val Phe Arg Ala Glu Leu His																
				225					230					235		
240																
Glu Pro Leu Arg Pro His Pro Gly Gln Gly Arg Ser Ala Gln Asn Met																
				245					250					255		
Phe Ala Phe Leu Ala Asp Ser Pro Ile Val Ala Ser His Arg Glu Gly																
				260					265					270		
Asp Gly Arg Val Gln Asp Ala Tyr Ser Leu Arg Cys Ser Pro Gln Val																
				275					280					285		

Thr Gly Ala Ala Arg Asp Thr Ile Ala His Ala Arg Leu Val Ala Thr
290 295 300

Arg Glu Leu Ala Ala Ala Ile Asp Asn Pro Val Val Leu Pro Ser Gly
305 310 315 320

Glu Val Thr Ser Asn Gly Asn Phe His Gly Ala Pro Val Ala Tyr Val
325 330 335

Leu Asp Phe Leu Ala Ile Ala Val Ala Asp Leu Gly Ser Ile Ala Glu
340 345 350

Arg Arg Thr Asp Arg Met Leu Asp Pro Ala Arg Ser Arg Asp Leu Pro
355 360 365

Ala Phe Leu Ala Asp Asp Pro Gly Val Asp Ser Gly Met Met Ile Ala
370 375 380

Gln Tyr Thr Gln Ala Gly Leu Val Ala Glu Asn Lys Arg Leu Ala Val
385 390 395 400

Pro Ala Ser Val Asp Ser Ile Pro Ser Ser Ala Met Gln Glu Asp His
405 410 415

Val Ser Leu Gly Trp His Ala Ala Arg Lys Leu Arg Thr Ser Val Ala
420 425 430

Asn Leu Arg Arg Ile Leu Ala Val Glu Met Leu Ile Ala Gly Arg Ala
435 440 445

Leu Asp Leu Arg Ala Pro Leu Lys Pro Gly Pro Ala Thr Gly Ala Val
450 455 460

Leu Glu Val Leu Arg Ser Lys Val Ala Gly Pro Gly Gln Asp Arg Phe
465 470 475 480

Leu Ser Ala Glu Leu Glu Ala Ala Tyr Asp Leu Leu Ala Asn Gly Ser
485 490 495

Val His Lys Ala Leu Glu
500